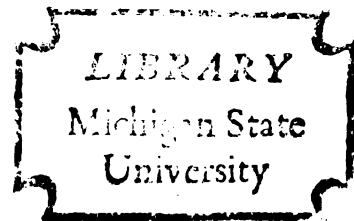


A STUDY OF THE ECONOMIC INFLUENCES OF PUBLIC
RECREATION AREAS ON LOCAL GOVERNMENT:
LIVINGSTON COUNTY, MICHIGAN

THESIS FOR THE DEGREE OF M. S.
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RICHARD WILLIAM LORANG

1939

THESIS



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ABSTRACT

A STUDY OF THE ECONOMIC INFLUENCES OF PUBLIC RECREATION AREAS ON LOCAL GOVERNMENT: LIVINGSTON COUNTY, MICHIGAN

By

Richard William Lorang

In America, with its emphasis on economic decision making, there is a high degree of competition between different prospective uses of land. This competition is particularly acute in and around urban areas. The study area, Livingston County, is located adjacent to the metropolitan region of Detroit. The competition for land presents many land use problems. An important problem is that a relatively large percentage of land in the study area is publicly owned and administered for public recreational use. Thus, the economic development of the land has been lost.

Because of the proximity of the study area to the heavily populated region of Detroit, the Huron Clinton Metropolitan Authority and the Michigan Department of Conservation acquired a considerable amount of land in Livingston County for park and recreation purposes. However, it appears that when planning the acquisition of recreation lands, the public recreation agencies placed

primary emphasis on the social needs of people in southeastern Michigan without proper consideration of the possible effects on the economic development of Livingston County. The research problem stems from the burden placed on the people of Livingston County by the non-county users of the public recreation areas in the county. The research hypothesis states that non-resident users of the public recreation areas in Livingston County, administered by the Michigan Department of Conservation and Huron Clinton Metropolitan Authority, do not spend sufficient amounts of money in Livingston County for goods and services to offset the additional costs they create for the county government.

The research methodology included the utilization of two methods to determine the degree of economic benefit created by recreation area users, and the development of a procedure to determine costs to the county government. A modification of the sales tax method utilizing correlations between attendance at the four recreation areas and monthly sales tax receipts in three recreationist-influenced retail items was used as the primary method. As a supporting method, the location quotient (employment method), as used by Edminister, was utilized.

To determine costs created by the recreation area users an interview format was prepared and several county agency officials were interviewed.

The intent of this research was to use methods which could utilize existing data. However, the lack of the completeness of data was one of the major problems in determining the costs. The major problem in determining the benefits was insufficient data on other seasonal influences such as seasonal homes and their affect on the economy.

The results of the research revealed that the research hypothesis was proven and a number of conclusions were drawn. Some of the conclusions were: (1) The correlation coefficients used in the modified sales tax method demonstrated a high degree of association between monthly sales tax receipts and monthly recreation area attendance; (2) Kensington Metropolitan Park was found not relating well to the economy of the study area possibly because of its "economic" isolation; (3) that further study is necessary to refine the use of the modified sales tax method; and (4) that more research is needed to determine the economic impact of seasonal homes in Livingston County.

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CHAPTER I

THE BASIS FOR STUDY

The Research Problem

In the American Society with its emphasis on economic decision making, there is a high degree of competition between different prospective uses of land. This competition is particularly acute in and around urban areas and results in many land use problems. There is such a land use problem in Livingston County, Michigan, because of the following combination of factors: First, Livingston County is a rural county located adjacent to a large urban area--it is on the "urban fringe" of metropolitan Detroit. Secondly, because of this location, land in Livingston County is rapidly being used for residential development. Thirdly, the county has an extensive natural recreation resource base with its morainal hills, lakes, marshes, and woods. And, fourthly, a relatively large percentage of its land area is publicly owned and administered for public recreational use.

To better understand this land use problem in Livingston County, a brief historical look is apropos.

To meet the need for recreation in the urban centers of southern Michigan the Huron Clinton Metropolitan Authority (HCMA) and the Michigan Department of Conservation began "in the 1940's to acquire and develop recreation areas in a

parabolic curve around Detroit."¹ Subsequently, much land was acquired through the years by both agencies in Livingston County. It seems in their recreation planning and development these public recreation agencies have considered the outdoor recreation needs and wants of the majority of the population in southeastern Michigan. However, in meeting the demands of the urban majority, the Conservation Department and HCMA have seemingly created problems for the rural people of Livingston County.

The problem possibly stems from the assumption that public recreation areas in Livingston County do not bring sufficient economic benefits to the local economy. Negligible taxes are paid on the recreation lands. The recreation land can not be developed for "more economically worthwhile" uses such as residential development. The recreation area users do not contribute to the county through the purchase of goods and services locally, but do seemingly create increased costs of government.

The latter of the above three facets of the economics of recreation in Livingston County points to the research problem of this study: Does the presence of large public recreation areas create expenses for the county which are not compensated through increased economic benefits to the county generated by users of the areas?

¹Arthur C. Elmer, "Competition for Park and Recreation Lands in Southeast Michigan," The Michigan Academy of Science, Arts and Letters, Vol. XLVII (1962), p. 469.

To better understand the research problem a brief explanation is in order. Livingston County is located in southeastern Michigan adjacent to the large metropolitan area of Detroit. Standard Metropolitan Statistical Areas (SMSA) are located on all sides of rural Livingston County. At the present time about 6.5 percent of the land area in Livingston County is owned and managed for recreational use by the Huron Clinton Metropolitan Authority, the Michigan Department of Conservation, and numerous private organizations.¹

Thus, there is a large acreage of publicly administered natural recreation resource accessible to a large concentration of people. Because of this proximity, the majority of the people using the recreation areas in Livingston County come from the metropolitan areas. As day users they do not spend significant amounts of money in the county for goods or services; therefore, the non-resident recreation area user does not contribute significantly to the economy of the county. As Clawson and Knetsch state:

People in less distant areas spend most of their money in their home areas if trips are primarily one-day visits, and visitors from more distant areas spend some money at home and some in locations nearer the recreation area.²

¹Livingston County Planning Commission and Huron Clinton Metropolitan Authority, Livingston County Recreation Inventory, 1964, no page.

²Marion Clawson and Jack L. Knetsch, Economics of Outdoor Recreation (Baltimore: The Johns Hopkins Press, 1966), p. 246.

However, the vast numbers of recreation area users do create an economic burden on the county. The county must spend increased amounts of its revenue to maintain roads providing access to the recreation areas, it must construct access roads to the recreation areas, it must deal with increased litter and sanitation problems, and it must provide law enforcement in and around these recreation areas. The county does not receive compensating financial assistance from the administrative agencies to offset the increased costs. Private non-profit organizations add to this burden. HCMA further creates an economic burden on Livingston County because of a fixed millage which the county must pay to support HCMA.

The Research Hypothesis

The hypothesis is stated as follows: The non-resident users of the public recreation areas in Livingston County, administered by the Michigan Department of Conservation and Huron Clinton Metropolitan Authority, do not spend sufficient amounts of money in Livingston County for goods and services to offset the additional costs they create for the county government.

Definitions

Benefits - benefits are economic advantages to the county measured in money added to the local economy or the county government.

Costs - costs are economic disadvantages measured in money lost to the local economy, or monetary expense to the county

government.

Dollar-value - an economic worth -- either as an advantage or disadvantage to the county -- expressed in dollars associated with the recreation areas.

Economic impact - economic impact refers to any influence or change in the economy as a result of expenditures or costs created by non-residents to the county.

Indirect costs and benefits - indirect costs and benefits are those which are not directly a result of the public recreation area users. They result from some other recreation-related economic activity.

Non-resident - a non-resident is a person who does not live permanently in Livingston County.

Recreation area - an area which is officially used for recreation and which is administered as a unit by a public agency for that purpose, including parks.

Value-added - gross expenditures made in the county less costs of the goods and services purchased by the firm making sales to the recreationist.

Limitations of this Research

It should be pointed out that this research did not assess all types of recreational benefits and costs to the county. This is not to say that other economic advantages or disadvantages do not occur, nor that intangible social benefits and costs do not occur; in all likelihood they do. However, it was simply not within the scope of this study to cover all types of costs and benefits. Benefit and cost

assessments in this study have covered only those economic aspects which are readily measurable through existing data, are the result of the public recreation area user, and relate primarily to the county government and the local economy. Some indirect economic benefits and costs have been assessed, primarily because the required data was readily available.

Significance of this Research

There are several reasons why this study is of importance: First, it is a study which seeks to determine if economic benefits occur to a local community from the users of nearby public recreation areas. Second, this study seeks to determine the economic costs to the local unit of government caused by the users of the public recreation areas. Third, it is a study concerned with the impact particularly of the day-user on the economy of the study area. Fourth, this research seeks to contribute knowledge which will be of assistance in determining policies. Lastly, this study theoretically proposes and tests a modified method of determining local economic impact of public recreation areas based on already existing data.

In several parts of Michigan and throughout the country local communities have become deeply concerned when state or federal governments have proposed to establish a park or recreation area nearby. Both the higher levels of government and the local levels are concerned about the economic impact of such a development upon the local economy. The National Park Service almost invariably will have an economic impact

survey made of a proposed park area. Examples in Michigan are the Pictured Rocks National Lakeshore and the Sleeping Bear Dunes National Lakeshore Areas; both have been subjects of economic impact studies.¹ This research is similar to the ones just mentioned, but the approach is somewhat different. In addition to determining economic benefits to the local community, it attempts to determine the economic costs incurred by the local unit of government. However, not all types of economic benefits nor costs were assessed because of the limited scope of the study. Economic costs are not generally considered in any significant detail in the above mentioned economic impact surveys, nor in other literature dealing with economic impact or recreation.

The feeling by local residents of areas affected by proposed recreation developments is one of skepticism. Moore found in a study he made of a proposed reservoir development that local people felt that "visitors who come to the reservoirs spend little, if any, money at the lake itself or in nearby towns, and that, therefore, little benefit reaches the local people."² This also is the feeling of the local people of Livingston County. No studies have ever been

¹Donald A. Bloome, The Proposed Sleeping Bear Dunes National Lakeshore: An Assessment of the Economic Impact (East Lansing, Michigan: The Institute for Community Development and Services, Michigan State University, 1967), p. vii.

²Arthur L. Moore, "Reservoir Recreation and Local Economic Growth," Economic Studies of Outdoor Recreation, Outdoor Recreation Resources Review Commission Study Report 24 (Washington: U. S. Government Printing Office, 1962), p. 109.

undertaken to assess the economic impact of recreational facilities in the Detroit region. Residents of Livingston County help support HCMA and gave up a portion of the local tax base to provide land for the recreation areas. Several newspaper articles were written on the topic of proposed State acquisition of more land for recreation. Such comments as these were given in the Brighton Argus:

Most people feel that the State is purchasing too much property for recreational facilities, working a hardship on those who wish to develop their own land.

.
 the county cannot stand any more decrease
 in its tax base.¹

Because of the lack of economic impact and other studies in the region, proper planning is difficult. Regional and State decision makers based their decisions on the needs of the majority of the people in the Detroit region; because of the lack of information, proper consideration could not and was not made for the people of Livingston County. Policy must be based on factual information; if not, poor decisions are made which do not consider the best interests of all the people involved. There are a number of ways in which an economic impact study can help in policy decisions. Brockman discusses a number of them:

- (1) It provides a picture of the importance of such areas in the economic structure of a given area . . .
- (2) It aids in the solution of land-use problems. On areas where recreation interests are in conflict with other uses, . . . an understanding of the

¹Brighton Argus (Brighton, Michigan), July 22, 1964.

comparative economic benefits derived from recreational development, as compared to other uses, may clarify such problems. (3) It aids in determining the desired size of recreation areas. (4) . . . economic surveys justify existing recreational facilities and proposed developments. (5) Economic evaluations aid administrators of public recreation areas in obtaining adequate financial support for their operations.¹

Although Brockman's statement is somewhat slanted toward the public recreation area administrator, his purposes are indicative of the value of economic studies to all decision-makers and planners alike.

Further evidence of the significance of this research is the fact that the research deals with the economic influences of the day-user. "Day-use recreation involves a greater proportion of Michigan's population than any other outdoor recreation activity . . ."² However, there are very few studies on the influences of the day-user. The recreation areas of the Detroit region are used mainly for day use activities. Therefore, the knowledge of the economic influences of the day-user are important.

Relative to determining day-use in the study area of Livingston County, a modified method is suggested and an attempt is made to empirically test the method. A statistical hypothesis is stated which suggests a high degree of association or correlation between monthly sales tax receipts

¹C. Frank Brockman, Recreational Use of Wild Lands (New York: McGraw-Hill Book Company, Inc., 1959), pp. 191-192.

²David N. Milstein et. al., Michigan Outdoor Recreation Demand Study, Vol. 2 (Activities Report), (East Lansing, Michigan: Department of Resource Development, Michigan State University, 1966), p. 8.1.

and monthly attendance at the recreation areas in the study region. With this method, data which are already collected are used. With the use of this method the degree of influence of the day-user on the economy of the county can be determined. By capitalizing the increased sales tax receipts above the "normal" yearly receipts, total dollar-value can be determined.

Review of the Literature for Relevant Studies

The benefits, as dealt with in the literature, are of two basic types: primary or intangible and secondary or tangible. Since this research was mainly concerned with the latter type of benefits, only incidental library research was done upon the former type.

Clawson and Knetsch explained the difference between the two types:

One class of values includes the primary benefits, largely expressed as the willingness to pay on the part of consumers of recreation services. Those who use the recreation opportunity receive a direct benefit whose value is largely measured by their willingness to spend available income. These values may not register in the commerce of the region or even of the nation. These are the values when properly measured provide the basis for calculating the economic worth of natural resources when used for outdoor recreation.

A second class of benefits includes the gains in the area where the expenditures are made. What is expense to the recreationist is income to the supplier of his goods and services.¹

Thus, primary benefits are those the recreation area user derives through his recreation experience. However, this

¹Clawson and Knetsch, op. cit., p. 231.

second class of benefits are the ones this research is concerned with; these are the benefits of recreation to the local community.

Most literature relevant to this research is found under the topic of tourism. Methodology to measure economic impact has been developed in the tourism field. However, most tourism studies have been made on a state-wide basis and therefore, changes in methodology and data sources must be made for local studies. Almost all economic impact studies are concerned, not with the day-user as this research is, but with the traveler or vacationer who stays in an area overnight. Other economic studies which have been made in relation to recreation are benefit-cost analysis of public reservoir projects. Benefit-cost studies of this type have limited value in regard to a research study like this one. Benefit-cost analysis studies are project oriented and compare the costs of providing for such things as flood control structures, power generators, and irrigation ditches with the possible benefits from them.

Few studies have been made which have attempted to determine the costs to the local government and the benefits to the community because of recreation. There is one study which approaches this concept although no attempt was made to determine costs to local government. It was by John M. Rathmell. He researched the economic impact of recreational travelers on the community of Alexandria Bay, New York. It involved the observation of cash register transactions one day per week in

rotation at each of five typical retail establishments serving both transient and local populations, such as drugstores, supermarkets, restaurants, hardware stores, and service stations. The author drew several conclusions from his study:

One, an area's ultimate consumer market consists of fixed and floating populations. The latter is either temporarily or permanently flowing in. Secondly, the temporary floating population's expenditure pattern is influenced by a) travel requirements, b) the area's recreational environment, and c) the traveler's subjective buying mood.¹

A relevant study but one which was not available for review was one by R. J. Kalter. This study was concerned with the development of a method by which the economic effects of recreation on the economies of local political subdivisions can be determined, and to empirically test and show the usefulness of such a model. The model was basically an input-output model known as "from-to analysis." The findings of the study showed that almost 10 percent of the county's income was derived directly from recreational exports; the direct-indirect income multiplier was only 1.09 for recreation final demand. This value indicates the small secondary effect of money spent on final demand items due to the relatively weak backward linkages of the local economy.²

¹John M. Rathmell, The Economic Impact of Recreational Travel on a Local Community (Ithaca, New York: Graduate School of Business and Public Administration, Cornell University, 1956), p. 80.

²R. J. Kalter, A Model to Estimate the Economic Effects of Water-Based Recreation Projects on Local Political Subdivisions (Madison: University of Wisconsin, 1966) cited in Index of Selected Outdoor Recreation Literature, Bureau of Outdoor Recreation (1967), p. 105.

Another study of the economic impact of recreation on local areas was made in Wisconsin. The objective of the study was to measure the contribution of recreation at the county level. Three counties were surveyed, and the results were used to project the estimated economic impact of recreation on the entire state. In order to determine the portion of business attributable to recreation in the three Wisconsin counties, surveys were undertaken in each of the three counties. Three different types of surveys were made: (1) a personal survey of retail customers as they left a sample of retail stores, (2) a personal survey of business owners, and (3) a mail survey of accommodation owners.¹ Not enough descriptive information was available on any one of the three counties so that comparisons could be made with Livingston County.

Other relevant studies on the assessment of the economic impact on local areas have been made for the National Park Service. These studies were made in areas of proposed additions to the national park system.

One such study was made by Robert R. Edminster. This study was a survey of the economy of 15 Utah and Arizona counties which would be affected by a new park. A national monument and a national park were part of the study area. The study counties were compared to five counties which were not influenced by recreation and tourism; these were control

¹James E. Littlefield, The Economic Impact of Recreation (Madison: Wisconsin Department of Resource Development, 1965), p. 4.

counties. Several methods of determining the benefits to the local area were used. Income and employment seasonal fluctuations were used as the most important indicators.¹

Two other studies which are relevant to the present research are those of Sleeping Bear Dunes National Lakeshore and Pictured Rocks National Lakeshore. Both studies discuss revenue losses because of the establishment of the National Lakeshore areas but did not deal with the estimates of costs to the local government because of the possible need for increased services. Both studies estimate the economic benefits to the communities. Increases in employment and personal income was estimated. The impact of summer tourism on retail sales was reflected in the receipt of monthly revenues. Food and gasoline sales were the highest in the months of July and August. These items were significant in determining the importance and seasonality of tourism.

The influence of the summer residents on the local economy was determined. The seasonality of the tourist expenditures were indicated in the Lakeshore studies by the use of such items as food and gasoline service stations. The percentage of total tax revenues from the sale of food is at a yearly high during the months of July and August in the Sleeping Bear Dunes study. It appears that the summer resident spends a large share of his income on food and services,

¹Robert R. Edminster, An Economic Study of the Proposed Canyonlands National Park and Related Recreation Resources (Salt Lake City: Bureau of Economic and Business Research, University of Utah, 1962), p. 9.

rather than on major durable items; although the durable item sales did go up in the summer months compared to the state percentage.¹

One other study which is somewhat related to the present type of research is the Michigan Tourism study. It is not a local area study but is a tourism study of the entire State of Michigan. The study was conducted by questionnaire samplings of tourists in Michigan. Even though the study is statewide in nature, it does have some application to the present study. Data from the sample which is of some value to the present research is: primary destination by county, residence of tourist party by county, and annual tourist activity indexes for 1961-1964. This latter data are derived from sales tax receipt information.²

In conclusion, there are a few studies which are related to the present research. However, the studies that do relate, do not concern themselves with cost determination to local government. No economic impact of recreation studies have been completed for Livingston County, nor any county or local area in southern Michigan.

¹Bloome, op. cit., p. 31.

²Central Michigan University, Center for Economic and Technical Assistance, Michigan Tourism (2 Vols.; Mt. Pleasant, Michigan: 1965).

CHAPTER II

THE STUDY AREA

Socio-economic Characteristics of the County

Livingston County, the study area, is located in the southeastern part of the State of Michigan. Howell, the county seat of Livingston County, is located in approximately the center of the county and is 60 miles or one hour driving time from downtown Detroit. Livingston County is also within easy driving distance of the Standard Metropolitan Statistical Areas of Flint, Ann Arbor and Lansing. Livingston County boundaries are Ingham County on the west, Oakland County on the east, Genesee and Shiawasee on the north and Washtenaw on the south.

The estimated population in 1965 of the five-county area encompassing Detroit and including Livingston County was 4,161,250.¹ Livingston County in the same year had a population estimated at only 41,327; less than one percent of the total regional population.² This is a rural county adjacent to several highly urbanized metropolitan areas. Table 1 points out the dramatic difference between Livingston County and four other southeastern Michigan counties in total

¹Michigan State University, Bureau of Business and Economic Research, Michigan Statistical Abstract (6th ed.; 1966), p. 33.

²Ibid.

population and density. These are the counties which make up the jurisdiction of the Huron Clinton Metropolitan Authority. Livingston County has the smallest population and the lowest density of the five-county Detroit region. These five counties contain approximately 50 percent of the total population of the State of Michigan.¹

TABLE 1.-Population and Density of Five Southeastern Michigan Counties^a

County	Population ^b	Density ^c
Livingston	41,327	67.0
Macomb	512,335	834.7
Oakland	776,532	787.1
Washtenaw	191,223	240.8
Wayne	2,639,833	4,392.6

^aMichigan Statistical Abstract, pp. 16 and 33.

^bEstimated 1965 population.

^cMeasured in number per square mile.

Livingston County is one of the fastest growing counties in the State. Table 2 shows the actual and projected increase in population of Livingston County compared to two other rural counties in the southern half of Michigan. Because of its location next to the larger metropolitan areas of the State, the eastern part of the county is being built up with subdivisions. Livingston County is increasing more rapidly in population than the other two counties which are similar economically and in population numbers.

¹Elmer, op. cit.

TABLE 2.-Projections of the Populations of Three Michigan Rural Counties, 1960 to 1980^a

County	1960	1965	1970	1975	1980
Livingston	38,233	41,327	45,125	48,455	54,077
Gratiot	37,012	38,376	38,556	39,987	41,840
Ionia	43,132	44,937	45,471	47,064	49,439

^aMichigan Statistical Abstract, pp. 32-38.

Livingston County is rapidly urbanizing and industrializing. Agriculture has been the main industry but the trend is changing.

The total acreage in Livingston County is 365,440.¹ Of this, 23,843 acres or 6.5 percent is owned and managed for recreational use by the Huron Clinton Metropolitan Authority, the Michigan State Department of Conservation, and numerous private non-profit organizations.² The public agencies administer by far the most acreage. The Michigan Department of Conservation administers 15,055 acres (including State Game Areas) and HCMA administers 1,580 acres.³ The Detroit Area Regional Planning Commission reports that as of 1966 "less than one-half of the acreage owned for regional

¹Livingston County Planning Commission and Huron Clinton Metropolitan Authority, op. cit.

²Ibid.

³Ibid.

recreation has been developed for use."¹ Thus indicating the future potential for the development of recreational facilities.

The Conservation Department administers three recreation areas of which all or part lie in Livingston County: Brighton, Island Lake and Pinckney Recreation Areas. HCMA administers Kensington Metropolitan Park, part of which is in Livingston County.

Natural Recreational Resources of Livingston County

Livingston County has been well endowed with natural resources which provide an environment for outdoor recreation. The glacial topography, vegetation, the many lakes and rivers, and the climate make up this recreation environment.

Livingston County is characterized by its glacial topography. The southeastern one-half of the county is composed of moraines having many lakes and streams meandering throughout. It is in this area that the four public recreation areas are located. Moraines are also found in the north, with outwash plains and glacial channels in the west and central part of the county. Several eskers are found on the edge between the moraines and the out-wash plain. Similar land forms are found in the northwest one-half of Washtenaw and the northwest one-half of Oakland Counties. This morainal land form feature is referred to as the upland lake region.²

¹Detroit Metropolitan Area Regional Planning Commission, Regional Recreation Lands Plan: Interim Report (Detroit: 1966), p. 21.

²Michigan Department of Conservation, Geological Survey Division, Map of the Surface Formations of the Southern Peninsula of Michigan (1955).

Wayne and Macomb counties, physiographically, are flat glacial lake plains having limited value for regional parks and state recreation areas.

Livingston County is divided into three major watersheds: the Huron River watershed, which flows to the southeast; the Shiawasee River watershed which flows north; and the Grand River watershed which flows to the west.¹ Water being an important resource in meeting recreation demand, is relatively abundant and located conveniently to a large concentration of people.

The climate is important in the type of recreational activities which can be made available by the public agencies. The sharp seasonal change in weather between summer and winter affects the recreation habits of the residents of southeastern Michigan by providing a variety of natural recreational opportunities. The cold winters make possible skiing, ice boating, ice-fishing, and snow mobiling.² In the summer months the climate is conducive to a full range of activities, such as picnicking, swimming, hiking, and boating.³

The forest cover of the study area is all second growth hardwoods. The county at one time was heavily forested with mixed hardwoods. Most of the timber was removed early in Michigan's history and the land used for farming.

¹Ibid.

²Detroit Metropolitan Area Regional Planning Commission, op. cit., p. 3.

³Ibid.

Table 3 indicates the relatively large amount of water area in Livingston County. The acreage of surface water in Livingston County is proportionately more than for any other

TABLE 3.-Land and Water Area of Selected Michigan Counties^a

County	Water Area (acres)	Land Area (acres)
Gratiot	0	362,240
Ionia	1,920	368,000
Livingston	7,680	355,440
Macomb	0	307,840
Oakland	14,040	561,280
Washtenaw	4,480 ^b	458,240
Wayne	11,520 ^b	388,480

^aMichigan Statistical Abstract, p. 73.

^bMuch of the water acreage for Wayne County includes frontage on Lake St. Clair, the Detroit River and Lake Erie.

of the selected counties. Gratiot and Ionia were included because they are to be used as control counties in the determination of the benefits and costs as associated with recreation. This subject will be discussed in Chapter III.

The Public Recreation Areas and Their Development

To understand the research problem it is necessary to know and understand the various characteristics of the public recreation areas and their administration. For this reason, the history of recreational development in southeastern Michigan, some characteristics of each recreation area, and some of the problems of recreation in Livingston County are

presented.

In 1943, the Department of Conservation began a program to provide recreation areas in southern Michigan. "This program called for the acquisition by the State of approximately 100,000 acres of recreation land near the metropolitan areas at an estimate cost of about \$8,000,000."¹

First purchase of lands occurred in August, 1944. Priorities in the purchase program had already been drawn up, and it was decided to concentrate acquisition in eleven areas to give sufficient blockings of state-owned land to make them more usable by the public . . . The areas included were Pinckney, Brighton and Island Lake.²

By the spring of 1946, "eleven recreation areas being actively acquired were placed under partial administration with funds allocated from regular operation budget of the Division of Parks and Recreation."³ Island Lake Recreation Area is made up of an older state park and land acquired under this program.⁴

Elmer states that "the land acquired in the early 1940's were the easy lands."⁵ The program slowed down and by the early 1960's only "some 50,000 acres had been acquired."⁶

¹Michigan Department of Conservation, State Recreation Lands in Southern Michigan: A Progress Report (1947), p. 2.

²Ibid., p. 4.

³Ibid.

⁴Ibid.

⁵Elmer, op. cit., p. 469.

⁶Ibid.

The costs per acre for land was reasonable; average costs were between \$85 and \$100 per acre.¹ The reason recreation land is so difficult to acquire now is the fact there is greater competition for the use of this land. Elmer states the present conditions:

Many of the suitable lakes within these purchase areas are now highly developed resorts or year-long residential properties; our acquisition for recreation will be in direct competition with the urban developers, the subdivision contractors, and builders, and the people who want a "place in the county."²

Huron Clinton Metropolitan Authority began its development in 1940.³ Details on the development of Kensington Metropolitan Park were not readily available.

Table 4 presents some of the characteristics of the recreation areas in Livingston County. Only the State administered areas provide camping facilities; therefore, bringing overnight visitors into the county. Overnight visitors tend to spend more in local areas than day-users. However, all the recreation areas emphasize day-use.

¹Ibid.

²Ibid., p. 470.

³Huron Clinton Metropolitan Authority, Twelfth Biennial Report as of December 31, 1965 [1966], p. 1.

TABLE 4.- Characteristics of the Public Recreation Areas Under Study in Livingston County, 1968

Recreation Areas	Total Acreage (a)	Acreage in Livingston County (b)	Water Acreage (c)	Acreage Intensively Developed (d)	Recreation Activities (e)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
					Food Ser.	(Concess.)	Swimming	Picnic	Fishing	Boating	Nature	Trails	Golf	Camping	Day	Camping	Riding	Hunting	Winter Sports	Develop.	Organiz.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Brighton Recreation Area	4,544	4,544	292	560	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

^a Acreage for State Areas from the Michigan Division of State Parks. Acreage for Kensington from Huron Clinton Metropolitan Authority.

^b Acreage estimates in county from the respective administrative agency.

^c C. R. Humphreys and R. R. Green, Michigan Lake Inventory Bulletin No. 47, (1962), pp. 74a and b.

^d Acreage developed intensively in recreation areas and park from respective agency.

^e Recreation activities from respective administrative agency.

CHAPTER III

METHODS AND METHODOLOGY

Introduction

As previously stated, the purpose of this research is to determine to what degree the users of public recreation areas contribute to the economy of the county and the subsequent costs they create for the county. Most studies in the past have been concerned with the economic impact of recreation at the Federal and state level. Methods of verifying the economic impact of recreation have not been developed for local levels of government; the methods available are generalized and not specific for a particular area.

Because of lack of appropriate methods, it was necessary to devise new research methods or modify old ones. In this research, modifications of methods used in determining economic impact at higher levels of government were made for determining the degree of economic benefit. Research procedures were devised for determining the costs of government, and for making the comparison between costs and benefits.

Organization of Study

To better carry out this research it was necessary to outline the actual steps which were taken in proving the research hypothesis. Below, in outline form, is the overall

procedure followed in this research: This is the research design:

- A. A preliminary study was made to determine possible research methods, the extent of information and data available, and avenues of obtaining information to test the hypothesis.
- B. Background studies:
 1. Study of the socio-economic characteristics and general economy of Livingston County, the study area.
 2. Study of retail and service industry.
 3. A detailed study and inventory of research methods and supporting data.
- C. General library research for relevant studies and secondary information.
- D. Procedure to step by step prove the hypothesis:
 1. Determination of economic benefits, if any -
 - a. Selecting a method to determine the economic benefit (sales tax method).
 - b. Hypothesize a method of determining the direct influence of recreation area users (correlation coefficient).
 - c. Gather sales tax data:
 - by county,
 - by item,
 - by month,
 - for a period of five years.
 - d. Select control counties.
 - e. Gather recreation area user data (monthly attendance figures).
 - f. Correlate monthly attendance with monthly sales tax.
 - g. Apply sales tax method to determine dollar-value added to the economy.
 - h. Apply location quotient (employment) as a supporting method in benefit determination.
 - i. Explain and show limitations of the methods used.
 2. Determination of costs to the county -
 - a. Select method to determine cost (interviews).
 - b. Decide which agencies of the county may incur costs because of the recreation areas.
 - c. Interview and survey records of:
 - County Road Commission,
 - County Sheriff,
 - County Prosecuting Attorney.
 - d. Based on information gathered determine costs incurred to the county.

E. Prepare the thesis.

Economic Benefit Determination Methods

Problems arose in this study, not only because good methods were lacking, but because existing data in a useful form was not as available as had been anticipated. It was the intention in this research to use existing data to test the research hypothesis. This approach was used since it was not financially possible for the researcher to conduct surveys to obtain necessary data. Specific data problems will be discussed under individual research methods.

Aside from the fact that there are significant problems inherent in economic impact studies, certain basic approaches in the study of the economic benefits to local areas are available to the researcher. Clawson and Knetsch, who provided a systematic basis for this aspect of recreation, have outlined it this way:

The economic impact on the economy of local areas cannot be measured by total expenditures (as has been done for state-wide studies). But income, . . . employment, sales, and value-added are all units which might be appropriate . . . A saving fact is that these different measures of the local economy tend to move together, e.i., as sales tend to rise, value-added and employment generated also tend to rise.¹

Which ever method is chosen, the chief economic consideration for the local county is the impact on the economy of a dollar expenditure stemming from the recreation area.² These dollars

¹Clawson and Knetsch, op. cit., p. 237.

²Ibid., p. 240.

stem for the most part from the recreationist. They also stem from expenditures of the public recreation area administrative agency on wages and on goods and services purchased locally.¹

The above outlined approaches and several others will be discussed in this chapter. The methods will be described, their limitations and advantages will be presented. Special attention will be given to the research methods used in this study. Several of the methods which will be discussed are: highway, survey, employment, and sales tax methods.

Highway Methods

The highway method of economic benefit determination has several approaches. One approach is to intercept motorists as they leave the state and either ask a series of questions at the car or leave a post card questionnaire which the motorist can complete later and mail to the surveyor. This approach usually covers such points as:

1. Previous visits to the state.
2. Purpose of the visit to the state.
3. Number of persons in the party.
4. Days spent in the state.
5. Estimated daily expenditures of the party.
6. Mileage in state.
7. Likes and dislikes regarding state.²

The highway approach is aimed at determining travel influences at the state level; usually not on a regional or county level. Much of the information gained in this manner is of great value to state tourist development agencies and others, but

¹Ibid.

²Littlefield, op. cit., p. 2.

does very little to help determine the dollar impact on the state's economy.¹

Another general approach using highway methods consists of estimating the portion of that mileage which is driven by tourists, and estimating the cost of that mileage to the tourists. Because of the particular way in which most states highway statistics are collected, this method has several shortcomings.

One additional highway method utilizes estimated incoming traffic counts. This method is used in Wisconsin and Michigan at points where major highways enter the state.² This highway traffic count is determined by using an Automatic Traffic Counter. However, there is where several sources of error enter in this method. An assumption must be made that all out-of-state cars are tourist-carrying and that the normal count of traffic flow is so accurate that the number of foreign cars above this is a true count. The ATC data is not collected to determine total volume flow to measure highway usage. Also, another shortcoming is the assumption which must be made that all tourists enter the state only on the major highway routes.

¹Ibid., p. 3.

²North Dakota Economic Development Commission and North Dakota State University, A Study of the Vacation and Recreation Industry in North Dakota to Determine Opportunities for Small Business (Bismarck, N. D.: 1963), p. 128.

The highway traffic method is good when used as an indicator. It serves to reinforce the data gathered by survey and other methods with regard to the routes and stopping places.¹ In summarizing the highway methods, it should be pointed out that these methods attempt to measure economic impact through the use of indicators which are not related to the economy. Also, these methods have little utility for small area studies because of the lack of highway data, or convenient ways of collecting it.

Survey Method

The method of asking tourists what their party spent over a period of time, as discussed in the first highway method, for food, lodging, etc., is generally recognized as unreliable.² The Alfred Politz Research, Inc. examined this "recall method" and found that "large expenditures which are made relatively infrequently, as in the case of consumer durable goods, can be recalled by a consumer much more readily and accurately than smaller expenditures."³ Politz also states that "small expenditures which are made relatively

¹Abbott L. Ferriss, "Types of Recreation Surveys," Recreation Research, ed. American Association for Health, Physical Education, and Recreation (Washington: 1966), p. 178.

²Littlefield, op. cit., p. 3.

³Alfred Politz Research, Inc., LIFE Study of Consumer Expenditures (New York: Time, Inc., 1958), Vol. IV, p. 3.

frequently require considerably shorter recall periods for reasons of accuracy in response . . ."¹ Recreation expenditures for the most part fall in this latter category.

Another reason for suspecting the survey as a method in which the respondent must recall past expenditures is:

. . . much of what a tourist spends is not directly accounted for. That is, resort rents must often be paid in advance, and gasoline and other credit card charges are not billed until several months after the expenditures.²

In addition to the above shortcomings, Waugh states, that "the lie (L) factor is high in the summer months when the tourist is highly mobile and frequently in a hurry."³ This is especially true in an interview. The survey with the use of a questionnaire which the respondent can answer when it is convenient for him and mail to the surveyor is used extensively.

Since many a researcher's budget is limited, economical methods must be used. This is the reason a survey was not used in this research. A survey would have been useful in two ways: to determine the extent of actual seasonal occupation of seasonal homes in the county, and to support the findings of the statistical hypothesis. In many ways the survey is an inadequate means of outlining the dimensions of the recreation industry:

¹Ibid.

²Littlefield, op. cit., p. 3.

³R. E. Waugh, "Increasing the Validity and Reliability of Tourist Data," Journal of Marketing, Vol. XX, No. 3 (January, 1956), p. 297.

It is necessary, in addition (to a survey), to examine some data intimately related to the vacation industry, yet not susceptible to a division which would permit the separation of tourist and vacation business from other sectors of the state's (or local area's) commerce. The value of such examinations is not in the volume indicated but in the fluctuations which occur.¹

Raphaelson believes that to show business fluctuations over a year "it is necessary to assume the seasonality of the vacation trade . . ."² Such an assumption is not valid in many areas including Livingston County because of the growing popularity of winter sports activities; furthermore, seasonality can be at least indicated if not proven by existing data. Surveys are very helpful methods but have often been misused and their value overestimated.

Employment Methods

There are essentially two employment methods used in the estimation of the economic benefits to a locality; that is, the estimation of employment attributed to recreation either directly or indirectly.

Edminster discusses one of these methods. His method involves the determination of employment directly and indirectly created by recreation or tourism. This is one of the methods used in this study.

¹Arnold H. Raphaelson et. al., A Study of the Vacation Industry in Maine (Orono, Maine: School of Business Administration, University of Maine, 1961), p. 73. (parentheses mine)

²Ibid.

In determining direct employment, the first step is that industries assumed to be tourist or recreation affected have to be isolated. Secondly, the average number of jobs per tourist industry within the county (e.g. grocery store, fruit stores and vegetable markets, eating places, hotels, tourist courts and motels) must be determined. These figures were obtained from the U. S. Census of Population. Thirdly, it is necessary to ascertain the total number of jobs in all types of industry in the county. Fourthly, by dividing the "average number of jobs" in each recreation industry by the "total number of jobs in the county," the "average number of jobs as a percent of total jobs" can be determined:

If the number of people expressed as a percent of total employment within a given tourist-affected industry in a study county was greater than a similar percent in an average of the . . . control counties, the difference was attributed to tourism.¹

The same steps are also followed with data on the control counties.

Control counties are those which are not influenced by recreation and tourism. These counties lack significant tourist attractions and the necessary recreation resource to draw people to them. The control counties used in the present research are those of Gratiot and Ionia. These counties were chosen because they have similar geographic location to Livingston County, are similar in total population numbers and density, they are close to SMSA's, major Interstate

¹Edminster, op. cit., in the First Appendix to Chapter 3.

highways pass through each as in Livingston County, and the incidence of tourism was considered slight.¹

The fifth step in this procedure is to determine the "difference attributable to tourism." This is accomplished by subtracting "average number of jobs as a percent of total jobs" for the control county (e.i., the average of all the control counties) from "average number of jobs as a percent of total jobs" for the study area. The final step in determining the number of jobs directly generated by recreation and tourism in the study area is to multiply "difference attributable to tourism" by the "total number of jobs in the county."² To understand the logic behind this method, a closer look at the last two steps is in order.

Since the firms in tourist related industries also serve residents of the study area, there is the problem of determining what part of the employment, for example, in eating places, is due to sales to tourists. This is determined by assuming that all jobs above a "normal" percentage in each industry could be attributed to tourism. The "normal" percentage figure is computed from the control counties.³

¹The incidence of the tourism is considered slight because both counties lack public recreation areas, both lack natural recreation resource base, and the annual tourist activity index for 1961-64 for each was far below state average. Index in Michigan Tourism, Vol. 1, Appendices.

²Edminster, op. cit., in the First Appendix to Chapter 3.

³Ibid., p. 9.

Thus, we have a method of determining the employment directly attributed to tourism or visitation to public recreation areas.

To complete the explanation of the method used by Edminster, the determination of employment indirectly generated by tourism must be determined:

The relation between basic industry (those persons engaged in production of good and services for residents of other regions) and secondary industries (those engaged in the production of goods and services necessary to maintain others who are producing the basic production of goods and services of local use) is important.

Any increase in the number employed in the basic sector requires the same increase in the secondary sector. The quantitative relationship between jobs in the two sectors is termed the employment multiplier and is defined as the increase in the total number employed in the basic sector. Since jobs directly created by tourism were considered to be basic, the employment multiplier would apply not only to such basic industries as agriculture and mining but also to tourism. The employment multiplier was found to vary slightly from county to ¹ county because of the varying types of economies.

The multiplier is the important component to determining the employment indirectly attributed to recreation. The basic-secondary employment multiplier can be further explained:

The basic-secondary multiplier can be thought of as an essentially improper fraction; featuring total employment in the numerator and basic employment in the denominator. The multiplier tells us that one person employed in a basic industry supports a certain number of persons including himself.

To illustrate, if total employment . . . is 5,000 and the employment in basic employment is 2,000, the multiplier becomes 2.5. One person in basic industry supports himself and 1.5² additional workers in secondary industries.

¹Ibid., in the First Appendix to Chapter 3.

²Ibid.

This procedure as discussed in Edminster is referred to by him as the employment "location quotient." Some of the shortcomings of the location quotient are:

The economy or the consumption habits of an area could very easily affect the results obtained by the "location quotient" method. For example, residents of one county eat out in restaurants more frequently than in other counties. The definition of just what is a tourist is a problem. A tourist might be visitors, i.e., people visiting the county, businessmen, people visiting friends.

The "location quotient" at best is only an estimate of tourist related jobs . . . However, such a method is necessary because of the absence of statistics from census data showing number of persons traveling, number of travelers who are tourists, amount of money spent, etc.¹

A second employment method used in the estimation of the economic benefits is a method used by Littlefield. To estimate the retail employment attributed to recreation, the following procedures were used:

Estimated retail sales attributed to recreation were multiplied by the percentage of retail sales paid out in wages. The percentage of retail sales paid out in wages was estimated using data from Robert Morris Associates Statement studies . . .

The total wages paid were divided by an average retail weekly wage paid in 1963 in each county and the State to get man weeks of employment and then divide by 52² to get the equivalent full-time employment.

The average retail weekly wage was derived from the Census of Business, Retail Trade.

This method worked well in Wisconsin counties. Results from this method "in many respects checked with the survey

¹Ibid.

²Littlefield, op. cit., p. 22.

of business owners in the three sample counties."¹ However, this method has little value by itself in determining local economic impact. Additional information on retail sales attributable to recreation must come from such sources as a survey.

In summary, employment methods are good indicators of the economic influence of tourism and recreation. Their major advantage is that they are a direct part of the local economy, and therefore, a valid measure of economic impact.

Sales Tax Method

A third method used to determine the economic benefits of recreation and tourism involves the use of sales tax receipts. The use of sales tax receipts as a measure of economic impact is a way of determining local area income resulting from recreational facilities located nearby.

Clawson and Knetsch point out some characteristics of local economic impact:

One of the more important consequences in the local communities is that by no means all of the total expenditures made by recreationists take place in the community located in proximity of the recreation area. Another is that the type of expenditures that are made in these local communities are of rather specific kinds. Food, lodging, and automobile service comprise the bulk of the expenditure items that take place enroute and near recreation areas. Further, there is a variation in type of expenditures that take place in local areas depending upon the type of recreational area or development and upon its location with respect to visitors. For example, if the visitors are within a few hours drive there will be little demand for lodging. Also, apparent is the

¹Ibid.

fact that total expenditures, however they be defined or measured, are not all net income to the locality. Much of the gross income must go outside the area to buy the goods and products necessary to service travelers, and to provide facilities . . . While a good portion of the money leaves the community more or less directly, a portion of it does remain in the local community.¹

Thus, because of this leakage, the economic impact of local areas cannot be measured by total expenditures as in the case of measuring larger areas.

In using the sales tax method, seasonal variations are measured. It is assumed that an upward trend during the summer is attributed to the tourist or recreation area visitor. Sales tax or a similar tax-based method of measuring the activity of tourism "is the only way presently feasible, if one is to use regularly collected data, which is currently available."² Raphaelson states four ways in which sales tax fluctuations are significant:

(1) they reflect part of the influence of the vacation industry on the state government's financial structure, (2) they indicate and reinforce earlier conclusions (surveys) on the seasonality of most of the vacation industry, (3) individually or collectively, they may be useful in forming a weighted index to reflect trends of business in the vacation industry, and (4) because of the *al valorem* nature of these tax levies any amount of tax attributed to the vacation industry may then properly be translated into a figure reflecting sales volume attributable to the vacation business.³

¹Clawson and Knetsch, op. cit., p. 239

²Central Michigan University, Michigan Tourism, p. 3.

³Raphaelson et. al., op. cit., p. 102.

Raphaelson's study was a state-wide study of tourism, but the same conclusion can be drawn as to the use of sales tax receipts to measure impact on local government units.

The initial step in the sales tax method is to determine the total sales tax receipts per month for a tourist or recreation-influenced item. This figure obtained from tax data includes both permanent residents and tourists. With this figure, it is then necessary to subtract the amount that can be attributed to the residents of the area. To accomplish this control counties are used. The fact that there is little or no tourism in these control counties means that sales to residents in the study area can be calculated directly from sales tax data. The figure or percentage spent for recreation-influenced items in the control counties (the figures for the two control counties averaged together) is then subtracted from the sales tax receipts per month in the study area. The result, if positive, is the amount attributable to tourists in the study area. Inasmuch as resident families purchase about the same dollar amount of food each month of the year, a total yearly estimate can be made.¹

Having determined the monthly retail sales attributed to tourism, the next step involves capitalization. In Michigan, retail sales to tourists are capitalized at 4 percent to yield an estimate of total spending by tourists. The 4 percent is, of course, the Michigan sales tax rate.

¹Robert W. McIntosh, "Tourism Trends," The Michigan Economic Record, Vol. VI, No. 2 (February, 1964), p. 1.

By capitalizing the original dollar-value, the impact on the local community is determined. The above procedure can be followed for several retail items which are tourist influenced. The items used in this research were grocery stores, family restaurants, and gasoline stations. These items were chosen because they are the items which might best reflect day-user impact. Other items on which sales tax is collected and which might reflect day-user spending were considered. However, items such as candy and confection, taverns and clubs, beer and liquor stores, and antique and pawn shops are not considered complete items as reported by retail stores.¹

There are problems inherent in the use of sales tax data to determine economic benefit. Sales tax figures do not necessarily represent all retail sales in Michigan. "The Michigan Sales Tax Act still provides many exemptions . . . each individual retailer is allowed a statutory exemption . . . of \$50 per month, . . . many charitable, educational, and religious institutions are not subject to the tax."² Further problems evolve:

When sales taxpayers file returns late, the tax is credited to the month in which it was due and all audits are credited to the month in which they are paid. Unfortunately, there is no way possible to separate sales taxes paid by tourist and transients

¹Interview with Mr. Duffy Wharton, Chief, Research and Statistics Section, Michigan Department of Revenue Division, January 26, 1968.

²Michigan Department of Treasury, Department of Revenue Division, Twenty-fourth Annual Report. (Lansing, Michigan: 1965), p. 47.

from those paid by Michigan residents . . . because of the lag involved in the preparation of statistical data, a slight "recession" or "boom" might not be reflected for several months.¹

Since sales tax data are tabulated to meet requirements other than tourism studies, their use for tourist measurement is somewhat awkward. In spite of these facts, sales tax collection figures are fairly good indicators of retail business trends within the state.² One further problem was the fact that in the Department of Revenue's data sheets the month of sale (receipt) and the month of collection differed. For example, June sales were recorded under July, the month of collection. This was because of the deadline for returns is the 15th of each month.³

In summary, the sales tax method does have some problems inherent in its use, but it is the only method presently feasible if existing data is to be used to determine the economic impact of the recreationist.

Modified Sales Tax Method as Used in This Study

Up to a point, the sales tax method as just described was the procedure followed in this research. Sales tax data was collected for three recreation area-influenced items or types of business.⁴ Data was collected monthly for the past

¹Ibid.

²Wharton, op. cit.

³Ibid.

⁴Data was obtained from the Research and Statistics Section, Michigan Department of Revenue Division.

five years. It was felt that using just one year's monthly tax receipts would bias the results. That is, all fluctuations in receipts would then be considered normal when in effect they may be abnormal occurrences. Also, reliability would be increased by the use of figures for several years. Data was collected in this form not only for Livingston County, but also for the control counties of Gratiot and Ionia.

The sales tax data was used for two different analysis. One form of analysis was the determination of dollar-value as explained above. The other analysis was to use the monthly sales tax data and monthly attendance of the recreation areas to develop correlation coefficients or degree of relationship between the two variables. Since the objective of this research was to demonstrate the negative economic influence of non-resident public recreation area users, it was necessary to compare the users of the recreation areas with some economic factor; that is, with a part of the county's economy. Sales tax methods have been used in past economic impact studies at the local level and have shown a reasonable degree of reliability.¹ This is one reason they were selected for use in this research problem. Also, monthly attendance data and monthly sales tax data are the only available comparable factors between the recreation areas and the local economy. Attendance data were also collected for a five year period.

¹Bloome, op. cit.

There are several steps which have been followed in developing the correlations. Since the rank correlation coefficient was used, it was not necessary to make assumptions as to what constitutes a correlation model. However, in making any correlation, it is necessary to know if we are dealing with a linear function. This was accomplished after preparing several scatter diagrams for the two variables, monthly attendance and monthly sales tax receipts. However, the degree of relationship is an imperfect positive correlation; that is, the means of the variables do not fall on the regression line. The relationship is positive in that the two variables are directly proportional.

Several additional remarks should be made on the properties of the correlation coefficients:

1. It is a pure number; the units in which X and Y are expressed do not affect its value.
2. Its value ranges from -1 to +1.

The next step in developing the correlation model is to tabulate the data into table form. Table 5 shows the tabular form used to calculate the data in determining the correlation coefficients for one year.

TABLE 5.-Form of Tabulation Used in Determining Correlation Coefficients, Each Year and for the Four Recreation Areas

n	X	Y	X_r	Y_r	d	d^2
Months	Attendance Data	Sales Data	Attendance Rank	Sales Rank	Differ.	Square

The formula used to determine the rank correlation coefficients is as follows;

$$r' = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

Where:

- r' is the correlation coefficient,
- n is the number of months used in any one year,
- X is the monthly attendance (visits) at the public recreation area,
- Y is the monthly sales tax receipts for the study area,
- X_r is the rank of each month's attendance out of a total of eleven. Number one was assigned to the month highest in attendance,
- Y_r is the rank of each months sales tax receipts out of a total of eleven,
- d is the difference between X and Y , or Y subtracted from X , and,
- 6 is a constant,
- d^2 is d squared.

Using this formula, rank correlations were made for each of the five years at each of the four public recreation areas. Eleven months were used, therefore, $n = 11$. December was not included in any of the calculations because of the extreme variation sales tax receipts showed for that month. By including December would have introduced a factor which would have caused distortion in the results. December is high because of the Christmas shopping season.¹

¹North Dakota Economic Development Commission and North Dakota State University Experiment Station, op. cit., p. 143.

Coefficients were determined for the monthly average of all three retail items, family restaurants, gasoline stations, and grocery store, and for the restaurant item separately.

No test of statistical significance was made because neither of the variables can be thought of as samples from a normal population.¹

The second step of the modified sales tax method was to determine the dollar-value added by "tourism." Here, several steps were followed. First, for the study area the monthly tax receipts (the monthly average of all three items) were determined to be a certain percentage of the total yearly tax receipts figure. This was also calculated for each of the two control counties, and the two averaged together. For the control counties, the average monthly figures were first determined and then the percentage determined. Second, the percentage for each month in the control counties was subtracted from the percentage figure for Livingston County. Livingston County's monthly percent figures usually exceeded in the summer those of the control counties. This usually happened during the months of from May through September. During other months of the year control county percentage figures exceeded those of Livingston County.

The third step involved capitalizing the monthly tax receipts for Livingston County by dividing it by 4 and then

¹John E. Freund, Modern Elementary Statistics (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1960), p. 337.

multiplying by 100. This gave the capitalized figure for the "average of three items." Fourth, the capitalized figure was multiplied by the percent attributable to tourism, as was determined in step two. This results in the dollar value attributable to tourism. This same procedure was followed in calculating the family restaurant item, except a monthly average of the three items was, of course, unnecessary to determine.

Since there are other factors in the county which are seasonal, these must be considered in some way and held constant. This is the fifth step. Three State Game Areas, seasonal home residents, and non-profit recreation organizations probably have some seasonal influence on the seasonal trends of the economy. The explanation as to how these were held constant will be considered in Chapter 4.

In concluding a discussion of the methods used in this research, it is important to state just why the sales tax method is applicable in Livingston County.

The sales tax method works well in counties which have a low population and which are rural in character.¹ The method is, however, losing some of its significance in many counties because of the increase in county populations. Related to the adverse influence of population, the monthly sales tax receipts must show seasonality or monthly fluctuations

¹McIntosh, op. cit.

in the economy. This is vitally important if the method is used to determine dollar-value increase in the local economy. Livingston County is rural, low in population, and the tax receipts do show seasonality. Therefore, the sales tax method is believed applicable to the study area.

One significant problem in the use of the sales tax method, in any modification, is that there may be other factors beside recreation areas which cause seasonal or monthly fluctuations. There may be such factors in Livingston County. There are a high number of seasonal or summer homes in the county.¹ Therefore, if these homes are truly seasonal, that is, if they are used mainly in the summer months during the same time period which the recreation areas receive maximum use, problems arise in the validity of the estimation of the economic influence. Summer use of the State Game Areas and private non-profit recreation organization are also factors.

To briefly state how the economic benefits were determined, two approaches or modifications of the sales tax method, and "location quotient" employment method as discussed by Edminister was used. By utilizing multiple methods, it is felt that the results, if pointing in the same direction for both methods would be indicative of the actual situation, thus proving or disproving the research hypothesis.

¹U.S. Bureau of the Census, U.S. Census of Housing: 1960, States and Small Areas, Michigan, Vol. 1, Final Report HC (1)-24 (Washington: U.S. Government Printing Office, 1962), pp. 24-104.

Cost Determination

No one method or system of methods presently exists for determining the costs incurred by local government because of public recreation areas or parks. Arthur D. Little comments on this aspect of economic studies:

We have seen many evaluations of the benefits of tourism, but few analysis of its costs. . . . it is significant that almost all [studied] place greater emphasis on benefits of tourism than on its costs and drawbacks. For a more balanced view of tourism's economic impact, these¹ negative aspects should be probed in depth.

A search of the literature was made in the related disciplines of urban planning, business administration and marketing, but the findings showed a void of cost related studies. Therefore, for the purposes of this study, it was necessary to develop several methods to estimate the costs so that a benefit-cost comparison could be made.

To make this comparison, an attempt was made to determine the dollar-value lost to the county government or expense incurred by the county government. To do this it was necessary to determine which costs were attributable to the recreation area user. After careful scrutiny, it was determined that there are four categories in which costs are incurred, and therefore, for which costs were subsequently determined: (1) expenses resulting to county agencies,

¹Arthur D. Little, Inc., Tourism and Recreation, prepared for the Regional Economic Development Office, U. S. Department of Commerce, 1966, p. 57.

(2) millage paid to the Huron-Clinton Metropolitan Authority, (3) the loss in property taxes, and (4) secondary economic losses.

Presented below are the methods developed to determine costs resulting to the county agencies, and how secondary economic losses were determined. No specific methods were needed for the others. The actual results of each are presented in Chapter V.

There are many agencies of county government whose function it is to provide services of a kind to the people. The people in turn pay taxes so that these agencies can provide the services.¹ The first step in this part of the overall method was to determine which of the county governmental agencies were effected by the recreation areas and the recreation area users.

It was decided that the agencies which would be effected most by the recreation areas and users were the county road commission, the county sheriff's office, and the county prosecuting attorney. These agencies were then studied further. In the local controversy over the Michigan Conservation Department's plan to acquire more land for the Brighton Recreation Area, the increased cost of roads and of law

¹The type of taxes paid are mostly general property taxes which support the county government.

enforcement was cited as costs for the county and as evidence against the Department's plans. Thus, local opinion was used to narrow down the field of choice.¹

After narrowing the field, interview formats were prepared for each of the agencies. The questions asked are presented in the Appendix. The data obtained was then used in the determination of costs to the county because of the recreation areas.

Several problems were encountered in the use of the interview formats. One problem was the fact that a pilot study or test of the format was not possible. Since the researcher had no knowledge of the way in which the agencies kept their records, duplication or overlapping questions had to be formulated. The formats could not be followed question for question because some of the questions were overlapping. A second problem was one of data. The cooperating agencies interviewed had no idea except rough estimates of what dollar-value or percent of their budget, and what time was spent because of the recreation areas. For example, the Road Commission did not have a record of the mileage of roads in and around the recreation areas, and the sheriff's office had no records of the number of arrests made of recreation area users.

¹Also helpful in narrowing down the field of choice was the Livingston County Extension Natural Resource agent, Mr. Hans Haugard.

After the interviews were completed, it was determined that the sheriff's office and the county prosecuting attorney were not significantly affected by the recreation areas and their users. A short discussion is given in Chapter V on the results of the interviews with the County Sheriff and the County Prosecuting Attorney as to why they were not affected by the recreation area users. Therefore, the only agency which was directly affected by the recreation areas was the County Road Commission.

To determine the costs incurred to the County Road Commission, it was necessary to determine the mileage of recreation-influenced roads in and around the State Recreation Areas and Kensington Metropolitan Park. Recreation-influenced roads are those which are a part of the county road system and provide access from State and Federal routes to the recreation areas. They include roads in and around the recreation areas, but not all of them. All roads in Kensington are maintained by HCMA and are, therefore, not county roads. The Conservation Department maintains some of the roads in its areas, but not all of the roads running through the recreation areas. The roads maintained by the respective agencies are not included here as recreation-influenced roads.

After determining the mileage of county maintained recreation-influenced roads, the annual construction and maintenance costs were determined from information in the

annual Livingston County Road Commission reports. Annual construction costs for both local and primary classed roads were available from a listing of all road construction projects. It could be determined from this listing those which were recreation-influenced roads. Total construction costs for each classification were added to determine construction costs for each year, 1964 through 1966. Annual maintenance costs were determined by multiplying the road mileage of recreation-influenced roads by the annual average cost per mile for maintenance in each of the two classifications. After the annual maintenance and construction costs for each of the two classes was determined, they were added together to give the total costs of recreation-influenced roads. This answer gives total costs on the recreation-influenced roads, but not necessarily all of these costs are attributable to the recreation area users. Other road users and natural deterioration had to be considered also.

A number of problems arose in the utilization of this method. One, in determining the maintenance costs, an annual average cost per mile had to be developed since information on individual costs per maintenance project was not available. Since the number of maintenance projects varied from year to year, and the amount spent on maintenance also varies, the average cost per mile changes drastically from one year to the next. Although this problem does not affect the result to any marked degree, it is something which should be kept in mind.

A second problem, one which was alluded to above, is that the resulting cost estimate on the recreation-influenced roads are not necessarily all attributable to the recreation area users. Local residents, local service and industrial vehicles, and seasonal home owners and their guests are other road users who cause road deterioration. To solve this problem, percentages were determined based on the number of vehicles registered in the county, number of seasonal homes, and recreation area attendance. These percentages represented the amount of road use of each. The number of vehicles registered in the county was assumed to represent all local road use. To represent the seasonal home resident and their guest's use of county roads, the number of seasonal homes in Livingston County was multiplied by 18.5 (which is the annual average number of seasonal home guests, 14.3, plus the average seasonal home family size, 4.2) and that number divided by 4.0, which is an average number of occupants per vehicle.¹ This represents the number of vehicles driven on the county roads of seasonal home residents and their guests. These figures are derived from a seasonal home study in Wisconsin.² One area in that study was similar in characteristics to Livingston County.

To determine the road use of the recreation area users, the recreation area attendance figures were used. The actual figures used were the sum of the 1966 attendance at Brighton

¹Detroit Region Area Metropolitan Planning Commission, Park User Survey, Part II (Detroit, 1959), p. 5. Statistically there are on the average 4.1 occupants per car to the regional parks in Southern Michigan.

²I. V. Fine, and Roy E. Tuttle, Private Seasonal Housing, prepared by the University of Wisconsin, Department of Commerce for the State Department of Resource Development (Madison, 1966), p. 34.

and Island Lake Recreation Areas, and one-half the total annual attendance at Kensington Park and Picnkey Recreation Area. Only one-half of the total annual attendance was used at these two areas because both have only one-half of their acreage in Livingston County. For simplicity, this attendance figure was divided by 4.0 to give the number of vehicles driven on the county roads by recreation area users.

An assumption was made that the rates of each individual road use would not change for the three years in question. The rates expressed as percentages were applied to the total road costs yearly to determine the cost directly attributable to the non-resident recreation area user.

A third problem in the use of this method is the inherent assumption that vehicular use causes all of the deterioration. However, this is certainly not true. A certain amount of road deterioration can be attributed to weather, and frost action in the spring of the year. The elements are a factor, but just how much of a factor is unknown. Therefore, this factor was not introduced in this method.

A fourth problem in the use of this method is that we do not know the amount of travel and use which is attributable to local residents. We do know the number and type of vehicle registered in the county, but have no way or realistically converting this number to amount of road use. The results from this method are, therefore, overly critical of other types of road users.



A second method of estimating County Road Commission costs does not demonstrate the absolute costs but is an indicator. This indicator involves a comparison with several other counties with similar mileage in each road classification and which are similar to population characteristics. It compares the amount of money spent for road construction and maintenance and percent inadequacy of primary and local road classes in Livingston County with Gratiot and Ionia Counties. It was hypothesized that since the control counties do not have public recreation areas, if the percent of roads in them which are inadequate is low, and, plus the fact that Livingston County spends more money on its roads annually than the control counties, that a large part of the inadequacy can be attributed to the recreation area users.

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CHAPTER IV

RESULTS OF BENEFIT ANALYSIS

Introduction

In order to prove or disprove the research hypothesis, it was necessary to determine the economic benefits Livingston County receives because of the public recreation areas. Below is a discussion of the results of benefit determination process.

To initiate the benefit determination process it was assumed, based upon a review of the literature, that public parks and recreation areas were the catalysis for the creation of a number of economic benefits. Some of the important benefits are: (1) expenditures of recreation area users and their influence on the local economy, including employment generated, (2) expenditures of the Division of Parks and concessionaire receipts, and (3) payments by the Conservation Department in lieu of taxes.

However, this study did not attempt to analyze the extent of all of these benefits, although each are briefly discussed. It should be remembered that the research hypothesis specifies influence of non-resident users of public recreation areas, and not the overall economic impact of recreation. The primary concern is then in demonstrating what benefits, if any, occur from recreation area users.

The public recreation area users influence on the local economy was analyzed through a (1) modification of the sales tax method, and (2) the employment location quotient method.

Results of the Modified Sales Tax Method

The procedure outlined in Chapter III, page 40, was utilized in determining part of the possible economic benefits to the county. The first major part of the "modified" sales tax method involves the determination of the degree of relationship between selected recreation-influenced retail items, and attendance at the four public recreation areas. The second part involves the determination of the dollar-value added to the economy.

Since, in this study we know the number of recreationists who presumably spend money in the county, but did not know the amount each one spends or per visitor expenditure, we draw on another kind of association to prove what recreation area users spend in the county. As the statistical hypothesis of this study states, if there is a high correlation coefficient resulting from a high degree of association between monthly sales tax and monthly attendance, then the amount spent in the county above what residents spend can be assigned to the recreation area users. Other factors which are seasonal are held constant or otherwise accounted for. The amount spent above what residents spend is determined in the second part of this method.

The modified sales tax method, as any sales tax method, relies to a large extent on the occurrence of seasonality or seasonal economic trends in the study area. Figure 1 shows the trends of the three tax items in Livingston County.

Gasoline station receipts show little peaking in the summer months and are in general rather erratic. In 1963 and 1964 this item showed highs in the summer months, but in 1965 through 1967, the last quarter months showed higher expenditures than the summer recreation months. In the two control counties, as displayed in Figures 2 and 3, gasoline expenditures were irregular also.

Grocery store receipts in Livingston County showed definite summer seasonal trends. However, the December receipts were much higher than the summer receipts. These year-end highs were also found in the control counties and for the state as a whole. This year-end peaking can be attributed to the Christmas shopping season.¹

The one item which showed definite summer seasonality in Livingston County was family restaurants and cafeterias. These definite seasonal trends did not occur in the control counties. Because of the definite trends exhibited in the study area, it was felt that this item would be the best item to run correlations on. Correlations were then run on family restaurants and cafeterias, and on the average of all three items.

¹North Dakota Economic Development Commission and North Dakota State University Experiment Station, op. cit., p. 143.

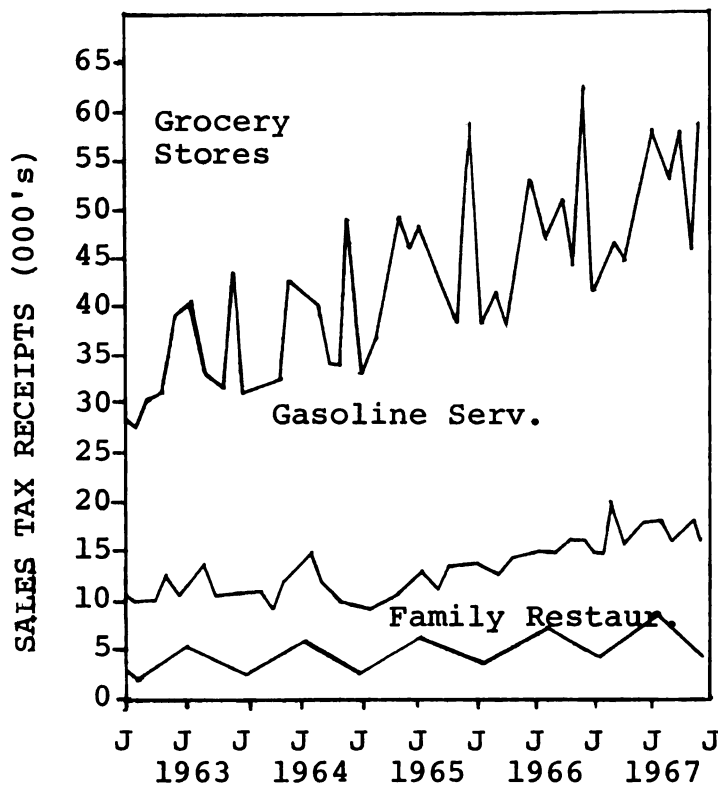


Figure 1.-Trends of the Three Sales Tax Items, Livingston
County, 1963-1967

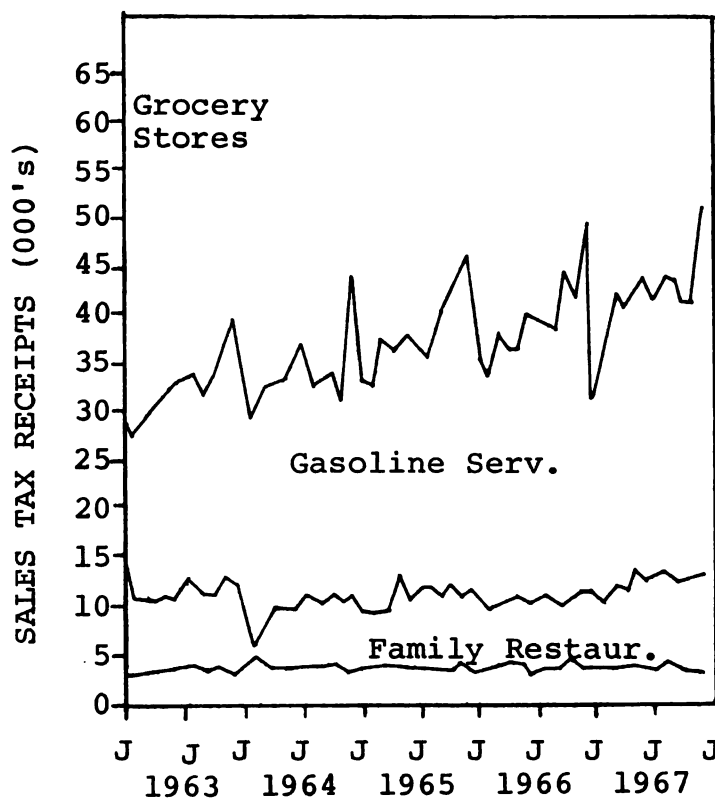


Figure 2.-Trends of the Three Sales Tax Items, Gratiot
County, 1963-1967

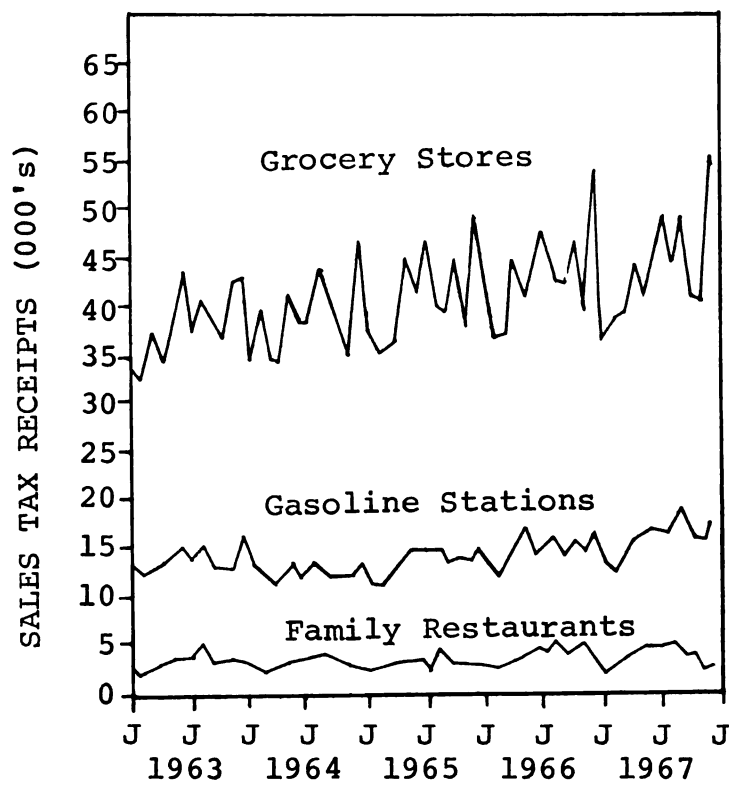


Figure 3.-Trends of the Three Sales Tax Items, Ionia County, 1963-1967

After viewing the results of the graphs on which the three items were plotted over time, it was felt that by making correlations on the average of monthly receipts of all three items that an overall view would be given as to the effect of each of the items. Table 6 shows the rank correlation coefficients of the monthly average of three items and monthly attendance at four public recreation areas. In making the

TABLE 6.- Rank Correlation Coefficients of the Monthly Average of Three Items and Attendance at Four Public Recreation Areas, 1963-1967

Recreation Areas	1963	1964	1965	1966	1967	Average
Brighton	.88	.89	.94	.84	.68	.84
Island Lake	.86	.80	.94	.79	.88	.86
Pinckney	.93	.86	.94	.76	.92	.88
Kensington	.87	.78	.93	.42	.90	.78

correlations, the December receipts were not included because of their extreme variations in all items, especially in the grocery store item. The reason the exact same coefficients occurred several times is because they were derived through the rank correlation method. A rank correlation method was used because of its simplicity and time saving advantages.

From observation of these coefficients a number of conclusions can be drawn which tend to support the statistical

hypothesis as stated on page 9. Kensington Metropolitan Park shows in general lower coefficients than the other recreation areas. This would be expected since most of the park is in Oakland County to the east. Also, the main entrance to the park lies off of I-96 in Oakland County and not in Livingston County.¹ Since 95 percent of the park users come from the Detroit region, few of the park users enter the study area and do not have an opportunity to spend money in Livingston County.² For this reason, it can be explained that because the average coefficient for Kensington is low, therefore, it has little economic effect on the study area. Furthermore, if the average of several yearly coefficients is below .80, the attendance of that recreation area can be assumed to have little effect on the economy. Conversely the closer it approaches 1.00, the more that recreation area's users affect that economy. Kensington's isolation from the study area's economy is also demonstrated in that it has high attendance in the winter months of January and February for winter sports activities. These are large numbers of visitors and would ordinarily be expected to influence the economy; however, they do not.

Another conclusion which might be drawn from Table 6 is that the more retail establishments there are in the vicinity

¹Interview with Mr. Charles Damm, Kensington Metropolitan Park, February 3, 1968.

²Detroit Metropolitan Area Regional Planning Commission, Park Users Survey, p. 41.

of a recreation area the more the attendance will influence the retail sector of the economy. The town of Pinckney, near Pinckney Recreation Area has a large number of grocery stores, gas stations, and family restaurants compared to the other recreation areas.¹ There are also a fair number of such retail establishments around Brighton Recreation Area and Island Lake. There must be service facilities around or on the access roads to the park if the recreation area users are to be an economic benefit to the county.

It should be pointed out that sudden increases in attendance do not always cause the sales tax receipts to go up correspondingly. There is an above normal trend attendance during October, 1967, at Brighton and Pinckney and a corresponding above normal increase in all three of the tax items. In this case, it would seem that attendance has affected the monthly tax receipts. The same was true in October, 1966, when Island Lake and Pinckney showed above normal trend attendances. However, in February, 1963, this relationship did not hold true. Brighton and Pinckney have above normal trend attendance, whereas, grocery store and gasoline stations are down with family restaurants showing some degree above the normal trend. Since these are non-recreation season months and the attendance figures in this case are relatively small, they would not have the capacity to influence the sales tax figures for the whole county. Also, discrepancies in collecting the sales tax may have thrown the results off. Not

¹Observations made and recorded on February 10, 1968, by author.

necessarily all monthly receipts are collected at one time.

"When sales taxpayers file returns late, the tax is credited to the month in which it is received rather than to the month in which it was due and all audits (some covering a period of years) are credited to the month in which they are paid."¹

In any case, the three items averaged together for each month and correlated with individual recreation area attendance figures show a highly associated relationship.

The item which shows the highest degree of association with attendance figures is family restaurants and cafeterias. Table 7 shows the correlation coefficients derived. Here we

TABLE 7.-Rank Correlation Coefficients of Family Restaurants and Cafeteria Sales Tax Item and Attendance at Four Public Recreation Areas, 1963-1967

Recreation Areas	1963	1964	1965	1966	1967	Average
Brighton	.86	.98	.96	.90	.87	.91
Island Lake	.81	.92	.87	.88	.93	.88
Pinckney	.89	.97	.96	.82	.93	.91
Kensington	.82	.88	.93	.63	.91	.83

have the same conditions as before. Kensington again shows the lowest average. However, here the coefficients are much higher than before indicating that this item is more closely associated to attendance than the other items.

¹Michigan Department of Treasury, Department of Revenue Division, Twenty-fifth Annual Report (Lansing, Michigan: 1966), p. 48.

The second part of the modified sales tax method involves the determination of dollar-value added to the local economy. The procedure followed is described on page 45.

Table 8 shows the results of this procedure for a five-year period. In the comparison with the control counties, expenditure percentage in Livingston County exceeded those of the two control counties averaged together. Livingston County percentages exceeded those of the control counties usually only during the months of May through September. In one instance, October was included. The figure for June, 1966,

TABLE 8.-Dollar-Value Added by All Seasonal Economic Activity in Livingston County, 1963-1967

Month	Year				
	1963	1964	1965	1966	1967
May	\$ 280	\$ -	\$ 1,340	\$ -	\$ -
June	1,680	5,080	1,300	9,520	2,890
July	5,300	4,350	6,460	11,980	6,390
August	6,030	3,500	1,890	910	2,780
September	250	2,610	150	4,170	-
October	-	-	-	180	-
Total	\$13,540	\$15,540	\$11,140	\$26,760	\$12,060

causes the results for that year to be exceedingly high. This high was because June was above the normal trend for the month in Livingston County. Also, June was a low month for the control counties.

These figures show dollars directly added to the local economy; money that was brought in from outside the county. However, these figures do not include the secondary affects of each dollar spent. Each dollar spent has a multiplier effect. "The second-round recipients--those who receive money directly from recipients of the original expenditures--have less to spend than the total that was spent by the original recreationist, and the third-round recipients have less again."¹

Since data necessary to determine the income multiplier was not available, and because of the relatively small amount of dollar-value added by tourists, the multiplier was not determined. Data on the amount of goods and services bought from outside the community, and the proportion of their income which local people spend on local goods and services was not available. Therefore, it would have been difficult to calculate the income multiplier with any degree of accuracy.

One further explanation is necessary. The average of all three items was used even though not all of the items showed definite seasonal trends when plotted on graph paper. However, since some seasonal trend was exhibited in all items, and they are definitely considered tourist-influenced items in a number of other studies, it was decided that their influence collectively should be considered.²

¹Clawson and Knetsch, op. cit., p. 240.

²This study utilized the same three items that both the study of The Proposed Sleeping Bear Dunes National Lakeshore, and The Michigan Tourism Study, 1957 used.

As part of the determination of dollar-value added to the economy, we must consider the amount of sales tax distributed back to the county. The amount returned to local units of government is remitted quarterly to the county treasurers on the basis of the 1960 population of counties.¹ The treasurers in turn dispense it on a population basis to the local units within their respective counties.² Local governmental units get 1/2¢, public schools are remitted 2¢ and the state retains 1-1/2¢ out of the 4¢ on a dollar tax.³ By multiplying 4 percent by the annual dollar-value added figures and that answer by 2.5 percent, one can get a crude idea of how much benefit is derived from the tax on tourists.⁴ Table 9 shows

TABLE 9.-Sales Tax Redistributed to the County from the Four Percent Sales Tax on Tourist Expenditures

Year	1963	1964	1965	1966	1967
Tax Returned (\$)	13.00	15.00	11.00	27.00	12.00

the results of this calculation. The resulting estimates are

¹Michigan Department of Treasury, op. cit., p. 41

²Ibid.

³Ibid.

⁴Only 2.5 percent is returned to the local units of government.

not very significant. Furthermore, these are liberal estimates. Tourist expenditures and recreation area users have little affect upon the amount of taxes returned.

To properly assess the benefits derived from the recreation area users it is necessary to isolate or hold other seasonal economic influences constant or account for them in some way. The most important summer seasonal influence on the economy other than the recreation area users are the seasonal home residents.¹ Other factors which are seasonal to a lesser degree are the users of the three State Game Areas and people associated with the non-profit recreation organization facilities in the county. The State Game Areas receive substantial use during the summer months; almost as much as during the fall and winter hunting seasons.² However, the use of the game areas in Livingston County was not readily available. They do not receive the amount of use that the recreation areas receive.³ No data was available on the magnitude of non-profit organization visitation or expenditure in the county either.

¹Interview with Mr. Hans Haugard, Extension Natural Resource Agent, Livingston County, February 7, 1968. These two factors were indicated as being of substantial magnitude in their seasonal influence.

²Walter L. Palmer, An Analysis of the Public Use of Southern Michigan Game and Recreation Areas, Michigan Department of Conservation, Research and Development Report No. 102 (Lansing: Department of Conservation, 1967), p. 26.

³Ibid.

The number of seasonal home residents had to be determined. The number of seasonal homes in Livingston County was 3,914 in 1960.¹ This compares with 270 and 706 in Gratiot and Ionia Counties, respectively.² Since construction has apparently been going on at a high rate in the county, it is safe to assume that there are by now about 4,000 seasonal homes in the County.³ Based upon data from a Wisconsin survey of seasonal homes, we know that there are 4.2 members per average seasonal home family and each seasonal home averages 14.3 guests per year.⁴ However, we will assume that a family pays for its guest's expenses in visiting them so the number of guests will not be included. By comparing the numbers of seasonal home residents to the recreation area users, and then applying a factor which reflects the magnitude of what each of the categories spends, we get an idea of their respective influence on the economy. Drawing from other studies, summer home residents spend about 5 times more than the predominately day users of the public recreation areas.⁵ There

¹U. S. Bureau of the Census, op. cit.

²Ibid.

³Michigan State University, Bureau of Business and Economic Research, op. cit., p. 112.

⁴Fine and Tuttle, op. cit., p. 34.

⁵Determined from information contained in Philip G. Hammer and Associates, Direct Testimony Before the Federal Power Commission in the Matter of Appalachian Power Company - Blue Ridge Project, prepared for the Board of the Virginia Department of Conservation and Economic Development (Richmond, Virginia: August 14, 1967), Exhibit 25.

are estimated to be about 168,000 people associated with seasonal homes, and about 968,000 visitors (1967) to the three state recreation areas. Kensington figures have not been included. Based upon the correlations, Kensington did not relate economically to the county. By multiplying 168,000 by a factor of five, we equalize the number of seasonal home residents with the recreation area attendance. Therefore, on an equalized basis there are 840,000 seasonal home residents. These residents then make up 46 percent of the total expenditures for retail items in the county.

The conclusion to be drawn here is that only 54 percent of the dollar-value added can be attributed to public recreation area users. The rest is assigned to seasonal home residents. With an average annual dollar-value added of about \$17,500, only about \$9,450 per year can be assigned to the public recreation area users.

A point should be injected here about one source of data. The expenditures by over-night residents in Hammer's study are not very similar to those determined by a Bureau of Outdoor Recreation study of seasonal homes in the New England area. The daily per capita expenditure in Hammer's study was \$8.10.¹ Whereas, in the BOR study the daily average expenditure during the summer months for the household was \$9.57.²

¹Ibid.

²U. S. Department of Interior, Bureau of Outdoor Recreation, Northern New England Vacation Home Study, 1966, (Washington: U. S. Government Printing Office, 1966), p. 10.

If the household expenditure was divided by 4.2 (the average number of members per seasonal home family) the results would be \$2.38. The important aspect of the Hammer study is the available data to compare day-use to a more permanent such as overnight cabin users. Without such a relationship it would be difficult to determine the extent of the seasonal home resident's influence on dollar-value added.

In summary, the results of the use of the modified sales tax method shows that: (1) there are high correlation coefficients between three of the public recreation areas and selected sales tax items; (2) that there is some dollar-value added because of seasonal economic activity; (3) this dollar-value is only partially attributable to the recreation area user; and (4) Kensington Metropolitan Park is somewhat dissociated from the county's economy.

Employment Generated by Recreation Area Users

As part of the measurement of the recreation area users influence on the economy of the study area, the results of the employment location quotient method is presented. This method serves as a secondary method or indicator by supporting the modified sales tax method. If the results of both methods point in the same direction then the reliability is increased.

The explanation of the location quotient method was discussed on page 32. Essentially, this method compares the employment in recreation-influenced industries in one county,

the county under study, with two control counties. It is not necessarily related to the seasonality factor, as in the sales tax methods, although seasonality is usually related to recreation-influenced industries just by their very nature. This method is concerned with total employment at a given period of time, not over a period of time as in the modified sales tax method. This method is also concerned with the relationship between employment in recreation-influenced industries and total employment in all industries in the county.

The results of the application of the location quotient method in Livingston County indicates that there are some jobs generated as a result of seasonal or other economic influence. Table 10 shows the number of jobs directly generated by recreation in Livingston County. There are 119 jobs directly generated by these influences. Entertainment and recreation services is the group which is most influenced. Food and dairy products stores are second with 40 jobs. Eating and drinking places is the least influenced, showing only 13 jobs created.

The creation of jobs in these categories will produce jobs in other industry groupings. These would be jobs indirectly generated by recreation. To determine jobs indirectly created, it is necessary to first determine the employment multiplier.

At the time the data was gathered for this study no economic base study had been completed for Livingston County.

TABLE 10.-Number of Jobs Directly Generated by Recreation

Industry Group	Livingston County		Control Counties		Livingston County	
	Ave. no. ^a of jobs	Ave. no. of jobs as a percent of total jobs	Ave. no. ^b of jobs	Ave. no. of jobs as a percent of total jobs	Difference attributable to recreation	Total no. of jobs directly created by recreation
Food and Dairy Products Stores	329	2.5	287	2.2	.3	39.6
Eating and Drinking Places	348	2.6	330	2.5	.1	13.2
Entertainment and Recreation Services	126	1.0	72	.5	.5	66.0
Total	803	6.1	689	5.2	.9	118.8

^aU. S. Census of Population, op. cit., pp. 24-321.

^bIbid., pp. 24-319 and 24-320.

Therefore, it was difficult to determine which industries were basic and which were secondary. Using some judgment as to which was basic, a multiplier was determined for the county. For comparison, multipliers were formulated for the control counties too. The multiplier for Livingston County was determined as being 1.45, and the average of the two control counties was determined to be 1.37. This means that for every one job directly created by tourism or recreation (a basic industry) in Livingston County, .45 jobs were created in the secondary job sector. Table 11 shows the total number of jobs directly and indirectly created by recreation in the study area. Fifty-four jobs were indirectly created. As can be seen, jobs related to the expenditures of recreation area users and other seasonal influences amount to only 1.7 percent of all jobs in the county. This amount is small.

TABLE 11.-Jobs Directly and Indirectly Created by Recreation and the Percent of Total Jobs in the Study Area

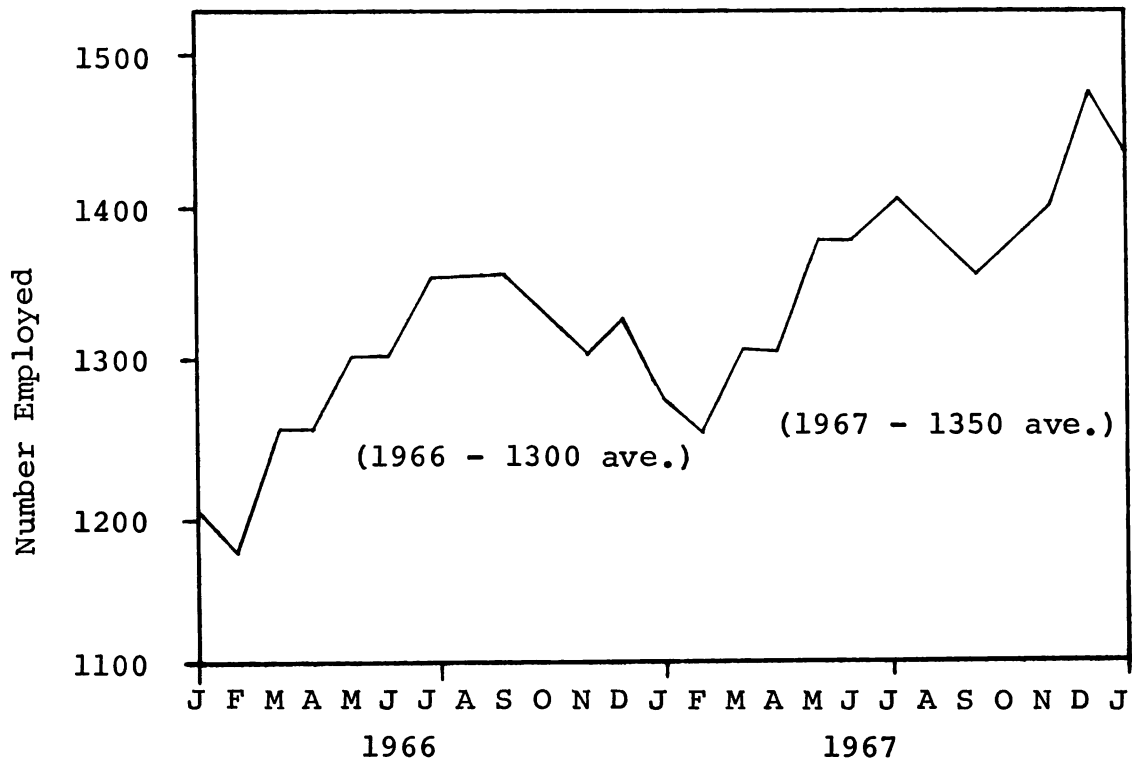
Study Area	Jobs Directly Created	Jobs Indirectly Created	Total Jobs Created	Total No. of Jobs in Area	Percent of Total Jobs
Livingston County	119	54	173	13,200	1.7

Since the data on the number of jobs in tourist related industry groups was collected in April, 1960, which was before the range of years used in other parts of the study, it is difficult to get a proper comparison. If the gradual increase in sales tax receipts over the years is any indication of increased economic activity, then possibly more jobs are attributable to the recreation area users now than in 1960. The results with this data is at least an indication of the situation.

As in the modified sales tax method, it was necessary to distinguish between the recreation area user expenditure's influence and other factors such as seasonal home residents in the use of the location quotient method. By adopting the 46 percent, which seasonal home residents expend of the total seasonal expenditure, we find that 78 jobs are attributable to the seasonal home resident's and 85 to the recreation area user. The other seasonal factors such as the State Game Areas and the private non-profit recreation sector are presumably small and their influence would not change the results greatly either way.

One further indication of the influence of recreation is the fluctuation in the number of people employed in retail trade. Figure 4 shows the seasonal fluctuations of total retail employment in the study area. There is a definite increase during the summer months coinciding with increased tourist and recreation activity in the county. There is also an increase

FIGURE 4.-Seasonal Trends of Retail Employment, Livingston County^a



Source: Michigan Employment Security Administration

^aAll sectors of the retail trade are grouped here.
Information was not available for each of the sectors.

in employment in December which is probably a result of the Christmas shopping season. The seasonality, as this indicates, means that possibly many of the jobs which were attributable to tourism and recreation are only seasonal jobs. Seasonal jobs do not have the same desirable effect in holding income in the area which permanent jobs do have. None the less, it is important to note that seasonal employment coincides with seasonal sales tax receipts increases and recreation area attendance highs.

A discussion of the meanings and implication of the results of the benefit analysis will be dealt with in Chapter VI. To briefly summarize the results of the modified sales tax method and the location quotient method, some economic benefits have occurred to the county because of the park visitor. However, these benefits are small. The sales tax method indicated there is some gross dollar-value added. The location quotient method indicated some jobs are generated by recreation area users. The use of both methods tends to serve as a means of check and counter-check. Thus, there has been indicated a similar degree of economic influence with both methods. Recreation area users have a small amount of economic influence on the county.

Expenditures of the Division of
State Parks and Park Concessionaries

Besides the expenditures made by the public recreation area users, there are other benefits derived to the county from the public recreation areas. These are the indirect benefits. Clawson and Knetsch state that "the dollars stem in a large part from the recreationist, but also to a significant degree from expenditures of park agencies on wages, and on goods and services purchased locally."¹ Local economic benefits occur not only from the park agency itself, but also from the concessionaire. Both of these aspects of the public recreation area have some local economic implications.

¹Clawson and Knetsch, op. cit., p. 240.

The park concessionaire means several things to the local economy, depending on certain of its characteristics: (1) does the concessionaire reside in the county? (2) where does he buy his merchandise? (3) what are his net sales? The answers to these and other questions dictate the degree of impact the concessionaire has on the local economy.

There are two different concessionaires who run the concession facilities in the three state recreation areas. An enterprise from Royal Oak (Oakland County) runs the facilities in both Island Lake and Brighton Recreation Areas, and the concessionaire who manages Pinckney is from Ann Arbor (Washtenaw County). Thus, the concessionaires are not residents of Livingston County. Therefore, the profits they earn are not spent in the county for the services and goods they normally buy. These profits are taken out of the county, representing a loss of potential value added. Kensington Metropolitan Park was not included because of its isolation from the county economically.

However, the losses from the local economy of the concessionaire's profits, because he does not reside in the county, may be compensated by the fact that most of the necessary merchandise is bought in Livingston County from local wholesalers and retailers.¹ This means that some benefits are derived as a result of the expenditures of the recreation area users, although they are indirect.

¹Discussion with Mr. Harold B. Guillaume, Michigan Department of Conservation, Division of State Parks, February 15, 1968.

Table 12 presents the net sales of the concessionaires in the three state recreation areas. These are the gross

TABLE 12.-Net Sales of Concessionaires in the Three State Recreation Areas

Recreation Area	1963	1964	1965	1966
Brighton	\$12,088	\$12,503	\$12,300	\$14,379
Island Lake	18,630	22,284	20,016	22,797
Pinckney	17,414	21,582	29,884	32,967

Source: Report of Concession Operations, Michigan Division of State Parks, 1963-1966 (unpublished).

sales from which have been subtracted the commission paid to the state. These are not necessarily profits. The concession operations at Brighton and Island Lake include general merchandise, bath house rental, and boats and motors. Pinckney includes these, and also, a horseback riding concession.

Aside from the influence of the concessionaires, Park Division expenditures in the local areas include wages, contractual services, supplies and materials. Data on these was only available for the last two fiscal years. Table 13 shows the expenditures of the state for the three recreation areas. Information for Kensington was not available. Most of the

TABLE 13.-Expenditures of the Three State Recreation Areas in Wages and Contractal Services, Supplies, and Materials

Recreation Areas	1965-66			1966-67		
	Wages ^a (\$)		Contr. Ser., etc. ^b	Wages (\$)		Cont. Ser., etc. (\$)
	Per. Seas.	Total		Perm. Seas.	Total	
Brighton	31000	47000		31193	15599	46792
Island L.	44000	N.A.	N.A. N.A. N.A.	43907	24151	68058
Pinckney	46000	69000	7461	45875	23421	69296
TOTAL	121000	183000	20798	20975	63171	184146
				1947	1450	770
				3585	3415	1550
				8170	2550	880
				13702	7415	3200
						24317

Source: Michigan Division of State Parks.

^aWage figures not available but permanent are similar from year to year, seasonal wages vary.

^bOnly total figures available.

permanent employee salary is presumably spent in the county and can be counted as value added.¹ This is true especially for Brighton and Island Lake Recreation Areas. However, much of Pinckney is in Washtenaw County, and therefore, much of the total permanent wage is probably spent there. Seasonal wages are mostly thought to be lost from the local economy because seasonal employees are usually from other than local area. Most of the contractual services, supplies and materials are acquired locally so this means some more local impact.

Essentially both the Park Division and the concessionaire expenditures contribute to the local economy. Also, the Division probably employs people from the local area to work in the park, but this was not determined.

Payments in Lieu of Taxes

The Michigan Department of Conservation pays to the township governments and local school boards a tax which is a compensatory payment for land removed from the local tax rolls. In southern Michigan

The Michigan Tax Commission determines the assessed value of all purchased land, parcel by parcel, and the amount of payment is determined by applying the same millage rate as prevails for private property. Thus, when local school boards, county board of supervisors, and electorate decide what the tax rate must be. . .they are determining the rate of payment by the state, as well as that for private land. The only difference between the state payment and local taxes are: (1)

¹Ibid.

1

the Tax Commission rather than the township supervisor determines the assessed valuation and (2) no buildings or other improvements are included in the assessment.¹

Based on these requirements, Livingston County received \$23,633 for the state-owned lands in the county in 1967.² Livingston County was number two out of 40 southern Michigan counties in the amount received.³

Since this figure includes in lieu payment for the State Game Areas too, this figure does not represent that which is reimbursed for the three State Recreation Areas. Assuming that the assessment per acre is about equal, and knowing that the total State acreage (15,030 acres) in the county, we can subtract the Game Area acreage to determine the in lieu payment on the State Recreation Areas. The recreation areas make up 68 percent of the State land upon which in lieu payments are made. Therefore, about \$16,000 are returned to the county because of the State Recreation Areas.

Huron Clinton Metropolitan Authority does not reimburse the county for lands it has removed from the tax rolls.

Other Benefits

It should be pointed out here that there probably are other benefits which the county receives from the public

¹William H. Colburn, "Taxes, Taxes, Taxes," Michigan Conservation, Vol. XXX, No. 3 (May-June, 1961), p. 12.

²Michigan Department of Conservation, News Bulletin, February 29, 1968.

³Ibid.

recreation areas and their users. The complete assessment of the extent of these benefits is, however, beyond the scope of this study.

Some benefits which may occur include possible increases in the value of surrounding property -- also an economic benefit. Certain social and psychological benefits probably also occur. Some Livingston County residents probably use the recreation areas, thereby, enjoying the recreation experience offered.

Certain conservation advantages occur because of the recreation areas. The vast acreage provides watershed protection and water recharge for the local groundwater aquifers. The recreation areas are also providing permanent open space for the region.

Summary and Conclusion

In the final analysis of the expenditures of recreation area users, it was determined that there were some benefits derived to the economy of the county, although they were small. Both the modified sales tax method and the location quotient method revealed that there are some small but positive benefits. Other aspects related to the recreation areas added some small economic benefits also.

For comparison with the costs incurred to the county, an attempt was made to determine benefits on a dollar-value basis. Table 14 shows these benefits for each of the different categories of benefits. Direct benefits are those associated directly with the recreation area users.

TABLE 14.-Benefits from the Public Recreation Areas and Their Users

Benefit Category	Year				
	1963	1964	1965	1966	1967
Direct					
Recreation Users	\$ 9,450	\$ 9,450	\$ 9,450	\$ 9,450	\$ 9,450
Sales Tax Return	13	15	11	27	12
Indirect					
Concessionaires	...	...	...	...	...
Division of Parks ^a	...	...	115,062	98,886	116,710
Lieu of Taxes	16,000	16,000	16,000	16,000	16,000
Totals	<u>\$35,463</u>	<u>\$35,465</u>	<u>\$150,623</u>	<u>\$134,363</u>	<u>\$142,172</u>

^aData was available from the Division of Parks only for fiscal years 1966 and 1967.

To determine how much the concessionaire spent in the county would be difficult. We do not know the amount of profits received from his operations. It would be unrealistic to apply an average percent of profit from another study, because the margins of profits vary considerably.¹ Therefore, for the sake of being conservative in our estimates, no dollar-value of concession operation was included. However, as noted earlier most of the concessionaires do contribute some economic benefits.

The State Division of Parks generates some economic benefits. In determining which values are of influence on the county, the full amounts of permanent salary, contractual services, supplies, and materials for Brighton and Island Lake were considered. No seasonal salaries were included. At Pinckney, only half of the permanent wages, contractual services, supplies, and materials were counted as benefits. Over half of the land area and facilities in Pinckney are not in Livingston County. The town of Pinckney is nearby and may be the business center for the recreation area. Also, Chelsea, in Washtenaw County may also be the business center; there is probably some pull in each direction. The figures for the fiscal year were divided by two and put under respective years. The 1965 and 1967 figures were then doubled to give an estimate for the entire calendar year.

¹Outdoor Recreation Resources Review Commission, Paying for Recreation Facilities, Study Report 12 (Washington: U. S. Government Printing Office, 1962), p. 14.

The State Park agency contributes more economically to the county than the users of the recreation areas do. We now are reasonably sure that benefits do occur as a result of the public recreation areas, but not from expenditure of recreation area users to any great extent.

CHAPTER V

RESULTS OF THE COST ANALYSIS

Introduction

As outlined in Chapter III, page 46, it was necessary to formulate a method to determine costs to the county government because of the recreation area user. In each cost-incurring category an attempt has been made to assess costs on a dollar-value basis. Where dollar-value estimates were impossible to formulate or unrealistic, indicators were used. Indicators were used because it was difficult to distinguish the cost which recreation area users created from other expenses which the county incurred.

The following were thought to be areas of loss to the county. Although not all of them were proven to be, the results of their analysis was covered. The categories of cost covered include: (1) costs of the County Road Commission, (2) cost analysis of other county agencies, (3) costs of supporting HCMA, (4) loss of property taxes, and (5) secondary economic loss.

Costs of the County Road Commission

Recreation area visitors are only one of the several road users causing possible road deterioration, therefore, an

expense to the County Road Commission. The amount of use which the county road system is receiving creates an expense which the local unit of government can not afford to bear alone. The demand on roads and highways is statewide.

Michigan's rapidly expanding population, its ever changing land use, the urban sprawl, . . . , the development of recreational facilities . . . are generating traffic and creating demands for new improved transportation facilities faster than highway funds can be made available.¹

It is clear that there are a number of road users, but the difficulty lies in determining how much use a specific road user makes of county roads. How much cost do recreation area users create?

In determining road costs attributable to recreation area users, the mileage of recreation-influenced roads was determined. Costs for construction and maintenance were then applied to the mileage to determine total annual costs of recreation-influenced roads. Table 15 shows the results. As you will note, the total figures decline between 1964 and 1966. However, for these same years the overall county highway expenditures have increased steadily from 1964 to 1966. This shows that the money is available but is being spent in other areas of the county, and that the decline is not a result of lack of money.

¹Michigan Department of State Highways, Sixteenth Annual Report for the Department of State Highways, County Road Com-missions, and Incorporated Cities and Villages of Mighigan, SHD Report No. 162 (Lansing, Michigan: Local Government Division, 1967), p. 2.

TABLE 15.-Total Costs of Recreation-Influenced Roads, 1964 - 1966

Year	Local Classification ^a		Primary Classification ^a			Totals
	Maintenance ^b	Construction ^c	Blacktop			
			Gravel Maintenance	Construction		
1964	\$15,987	\$20,543	\$5,247	\$30,830	\$204,818	\$277,425
1965	22,901	43,449	5,106	55,650	38,279	165,385
1966	20,864	22,079	4,500	46,347	52,457	146,247

^aBetween 1964 and 1966 the change in mileage in each classification has changed only a total of 2.5 miles. The primary class has increased 2.5 miles and the secondary class decreased correspondingly.

^bLocal maintenance costs were computed by multiplying the local road mileage of "recreation roads" by the average cost per mile of local road maintenance for each year.

^cFigures for local construction were derived from the Annual Reports of the Livingston County Road Commission.

To determine how much costs recreation area users create, it was necessary to assign weights to different road uses. Percentages were based on the number of vehicles registered in the county, the number of seasonal homes, and the recreation area attendance. Other road users, such as State Game Areas and non-profit recreation organizations, were assumed too minor in importance and were not considered. Table 16 summarizes the results of this aspect of road cost determination.

Since there is no way to realistically cover the number of registered vehicles in the county as to the amount of road use, the conservative figure of 26,306 was used. The results from this method are, therefore, overly critical of the other types of road uses. By including this figure, at least some indication is given of the local use of the roads.

On the basis of the above percentages approximately 69 percent of those annually using Livingston County access roads are recreation area users. In the summer season, the percentage of recreation area users is higher than during the other seasons. A look at the monthly attendance statistics for a year attests to this. Table 17 shows the monthly attendance at Brighton Recreation Area during 1966. This attendance information, as an indication of high summer road use, is supported by an origin-destination survey made in 1964 by the State Highway Department. The survey was taken

TABLE 16.-Total Number of Vehicles per Type of Road Use
and Percent Each One is of the Total Number of
Vehicles

Type of Road Use	Number of Vehicles	Percent
Total potential local vehicle use of county roads	26,306 ^a	4
Total estimated number of vehicular use by seasonal home owners and guests	185,000 ^b	27
Total estimated number of recreation area user vehicles use of county roads	462,000 ^c	69
TOTALS:	673,306	100

Sources:

^aU. S. Department of Transportation, Bureau of Public Roads, Highway Statistics 1967 (Washington: U. S. Government Printing Office, 1968), no page.

^bU. S. Bureau of The Census, U. S. Census of Housing: 1960, Volume I, States and Small Areas, Michigan, Final Report HC (1)-24 (Washington: U. S. Government Printing Office, 1962). See page 52 of this paper as to how this figure was arrived at.

^cMichigan Department of Conservation, State Park Division, The Park Weekly Report (1963-1967), unpublished. See page 52 of this paper.

TABLE 17.-Monthly and Seasonal Attendance at Brighton Recreation Area, 1966

Month and Season	Monthly Attendance (Visits)	Seasonal Attendance	Percent
Winter		3,988	1.7
January	2,110		
February	1,140		
March	738		
Spring		48,745	28.4
April	1,302		
May	12,215		
June	35,228		
Summer		107,361	62.6
July	64,382		
August	28,727		
September	14,252		
Fall		10,445	6.1
October	5,504		
November	3,359		
December	1,582		
Total	171,373	171,373	100.0

Source: Michigan Division of Parks, op. cit., Park Weekly Report, 1966.

just east of Hamburg in Livingston County. Of those going to Bishop Lake in Brighton Recreation Area, 89 percent were non-residents from the Detroit area and 11 percent were from other areas including county residents.¹ This further indicates the high amount of non-resident road use. Also, traffic counts made by the County Road Commission indicate

¹Information from Mr. Edward W. Bailey, Michigan Department of State Highways, 1964 Traffic Origin-Destination Study, unpublished.

that about 90 percent of the road users are non-resident. On a summer holiday over 2,000 vehicles used Bishop Lake Road.¹ There are no cottages on this road; therefore, all were destined for Brighton Recreation Area facilities.² Therefore, it is apparent that most of the road use by recreation area users is in the summer and spring season.

We now know that recreation area users utilize the recreation-influenced roads most, and that they used them the most in the summer season. If these figures are indicative of "real life", then approximately 69 percent, minus a certain undetermined amount for natural road deterioration, can be attributed to the users of the four public recreation areas in the county. Table 18 shows the road costs attributed to the recreation area users.

TABLE 18.-Road Costs Attributable to the Four Recreation Areas

Year	Costs
1964	\$185,900
1965	110,900
1966	97,900

¹Interview with Mr. Walter J. Clink, Superintendent Manager, Livingston County Road Commission, February 13, 1968.

²Ibid.

A second method used is really just an indicator of costs. It involved a comparison of the study area with the control counties used in the benefit analysis of this paper. Since the amount of mileage in each road classification, and the population and economic characteristics are similar to the study area, a comparison of the "percent inadequacy" and "expenditures on maintenance and construction of roads" is thought to be valid here. Table 19 shows the amount each of

TABLE 19.-Total Spent on Maintenance and Construction and Percent Inadequacy of Primary and Local Roads for 1964, 1965, and 1966

County	1964 ^a	1965 ^b	1966 ^b	Percent Inadequacy ^b	
				Primary Class	Local Class
Livingston	\$788,303	\$1,070,180	\$974,746	65.7	78.5
Gratiot	793,811	922,611	794,433	45.6	57.6
Ionia	n.a.	924,860	751,617	34.4	75.6
State Ave.	..	..	..	37.7	47.3

^aMichigan Acting Auditor General's Department, Michigan County Government Financial Report (Lansing, Michigan: 1964), p. 10.

^bMichigan Department of State Highways, Sixteenth Annual Report, Table No. 2-3. Percentages are for 1966. 1965 figures are very similar.

the counties has spent on their road system and the percent inadequacy of their roads. Livingston County has a high percentage of inadequate roads compared to similar counties and the state average, especially considering the amount of money being spent for highway improvement.

However, it must be emphasized that this is merely an indicator, and its interpretation must be viewed in light of several things. One, an assumption must be made that recreation area users used the roads the most and, thereby, caused their inadequate condition. The discussion of the first method removes some of this doubt. Also, since the amount of road maintenance and construction expenditures are functions of the amount of money available and not the need for improvement, the second method should be used with caution. If money was appropriated proportionately to the need for improvements, this indicator would be a valid way of measuring costs from the recreation use of the roads.

Cost Analysis of Other County Agencies¹

As part of the cost determination section of this study, an attempt was made to determine the costs to the Livingston County Sheriff's Department and the County Prosecuting Attorney's Office. The results indicated that there was little or no measurable costs to these two county offices which could

¹Information presented in this section was obtained from an interview with the County Sheriff's Office and the County Prosecuting Attorney. Unless otherwise indicated these are the sources of information and no further references will be given.

be attributed to the recreation area user. For the sake of information and as necessary background information for the final conclusion of the paper, the results and analysis are presented here.

The results of the interview with the County Sheriff and his Chief Deputy indicated that this office incurred little measurable expense as a result of the recreation area user. The main reason for the negative report here is that both the State Conservation Department and the HCMA handle the law enforcement within their areas. The Sheriff's office does not patrol in Kensington Park at all. HCMA personnel patrol the park. Both the State Park Rangers and the Authorities' park police have sufficient authority to provide visitor and resource protection. The Sheriff's office does provide help if it is needed, but the Conservation Department does not rely upon the County to enforce regulations in the recreation areas. The Sheriff's office, as a matter of routine only, patrols the roads in and around the recreation areas and are not called upon to make special patrols. This is something they would do even if the recreation areas were non-existent. The Sheriff's office patrols all of the other roads and highways in the county. "The State recreation areas are a small part of the (Sheriff) Department's responsibilities."¹

¹Interview with Mr. Lawrence Gehinger, Sheriff, and Mr. L. Erdman, Chief Deputy, Livingston County Sheriff's Department, February 13, 1968. (parenthesis mine)

Another indication that the recreation areas are of little burden on the Sheriff's office is the relatively equal number of miles driven each month in patrolling the county roads and highways. Table 20 shows the number of miles driven each month for 1967 and "these are pretty much the same over the years."¹ Although summer is the busiest season, and July

TABLE 20.-Mileage Traveled Each Month in 1967 Patrolling Livingston County Roads and Highways

Month	Miles
January	18,900
February	16,608
March	22,442
April	22,144
May	n.a.
June	22,444
July	24,881
August	22,950
September	23,642
October	25,065*
November	21,773
December	22,482
Total	243,251

Source: Livingston County Sheriff Department

*An additional two men and one patrol car was put on duty.

the busiest month, the high number of miles driven on patrol can not necessarily be attributed to recreation area users because of the substantial number of seasonal homes and other seasonal factors such as increased travel in the summer.

¹Ibid.

The Sheriff estimates that about 90 percent of the arrests made in the State recreation areas were made by the Conservation Department. The remaining 10 percent were made by other law enforcement agencies. As a county wide comparison, the Sheriff's office made only about 50 percent of all arrests in the whole county. State Police, the Conservation Department wardens and rangers, and Huron Clinton's park police presumably made the other 50 percent of the arrests.

There is no seasonal increase in the number of arrests made by the County Sheriff's office. The number of arrests average about 60 to 65 per month. The monthly distribution is irregular and does not indicate any seasonality. Arrests are the highest generally in July, but months with important holidays are also high.

With the data that the Sheriff could readily provide, it was next to impossible to determine the dollar-value impact of the public recreation areas. Undoubtedly some costs occur because of the large amount of traffic. Traffic arrests were the highest number of all types of arrests made. However, highway travel increases in the summer and the Sheriff's office is responsible for all highways and roads in the county.¹ There is no way to assign a dollar-value to what little impact that exists as a result of recreation area users. The conclusion is that there is no measurable impact

¹U. S. Department of Transportation, Bureau of Public Roads, Highway Statistics, 1965 (Washington: U. S. Government Printing Office, 1967), p. 5.

on the County Sheriff's Office due to the public recreation areas.

One further indication that the public recreation areas and their users do not create a burden on the Sheriff's Office is that Livingston County spent a comparatively smaller amount for police protection. In 1962, Livingston County spent only \$174,000, whereas, Ionia spent \$253,000 and Gratiot spent \$189,000.¹

After interviewing the County Prosecuting Attorney, it was found that he is not involved with cases such as those which emanate from the recreation areas. Most of these, which are traffic and conservation violations, go before the Justice of Peace and very seldom are referred to the County Court and Prosecuting Attorney. On very few occasions are such cases put before the county court.

There are six active Justices of the Peace in Livingston County who are all locally elected. A Justice of the Peace receives \$4.30 for each case brought before him. Little costs are therefore incurred by either the County or the townships because of the recreation area visitors.

Costs of Supporting the Huron-Clinton Metropolitan Authority

The County contributes an annual set millage to support Huron-Clinton Metropolitan Authority. This is a loss

¹U. S. Bureau of the Census, County and City Data Book, 1967: A Statistical Abstract Supplement (Washington: U. S. Government Printing Office, 1967), p. 175.

accounted against recreation since Kensington Metropolitan Park is partly in Livingston County. However, it is an indirect cost to the county as far as the research hypothesis is concerned.

The question may be asked, if Livingston County residents use this recreation facility and thereby benefit, why is it an economic loss? The fact is, Livingston County residents do not use Huron-Clinton facilities in proportion to the amount the county pays to support it. A survey made in 1959 reported that Livingston as a county made up only .5 percent of the attendance of all cities and counties in southeastern Michigan at all of the regional and State parks.¹ As a comparison, all other counties and cities with the exception of St. Clair had a much higher percent attendance in those State or regional parks within its boundaries.² This lack of attendance in Kensington by Livingston County residents may somewhat be attributable to the rural characteristics of the county.³ The socio-economic characteristics are becoming increasingly recognized as important in the utilization of recreation

¹Detroit Metropolitan Area Regional Planning Commission, Park User Survey, op. cit., p. 44.

²Ibid.

³Outdoor Recreation Resources Review Commission, National Recreation Survey, Study Report No. 19 (Washington: U. S. Government Printing Office, 1960), pp. 121-138. Rural farm and rural non-farm in non-SMSA's participate less than those in urban areas.

resources. The type of recreation activities provided in the recreation areas in Livingston are those which are demanded by the SMSA resident, not those who live in a rural area. However, Livingston County is increasing in population and is becoming more urbanized, so that this non-attendance characteristic may be changing.

Another contributing factor to Livingston's non-attendance at the regional public recreation areas is the existence of Thompson Lake Park near Howell. This park is only open to city and some county residents.¹ In being open only to local area residents, it may go a long way toward absorbing recreation demand generated inside the county. The existence of large State Game Areas may also affect local demand.

At the present time, however, the annual millage paid to HCMA is a loss economically to the county residents. In 1962, Livingston County paid \$36,077 for its support of the Authority, and in 1966 the cost had gone up to \$37,979.² However, as Livingston becomes more suburbanized, utilization of Kensington should increase.

¹Livingston County Press, "City Park Opens Up" (Howell, Michigan: May 24, 1967.)

²Michigan Acting Auditor General's Department, Michigan County Government Financial Report (Lansing, Michigan: 1964), p. 10; and Livingston County Clerk, Annual (1966) Financial Report, January, 1967, p. 4; respectively.

Loss of Property Taxes

The loss of property tax dollars to the county because of the State acquisition of land is always a problem for all parties concerned. No one will argue that there is not a loss in tax dollars when land is taken off the tax rolls. But to determine the amount lost and compare this to the amount gained in other forms of revenue to the county, it is necessary to justify the expenditure of public money for large amounts of park and recreation land.

Public park agencies have removed 13,000 acres from the tax roll as of 1964.¹ The majority of this land was vacant or submarginal farm land. An average assessment per acre, provided there were not any buildings or other improvements on the land, was about \$1.00.² Therefore, about \$13,000 is lost annually. However, this is not the only loss. This is the immediate loss. The economic loss which is felt over a period of time is the loss to development.

Secondary Economic Losses

In the determination of the economic benefits in Chapter IV, the benefits derived through the application of the employment multiplier was discussed. By the same rationale, costs are incurred to the local government as benefits are incurred to the local economy.

¹Livingston County Planning Commission and Huron-Clinton Metropolitan Authority, op. cit., no page.

²Discussion with Mr. Hans Haugard, Extension Natural Resource Agent, Livingston County, January 9, 1968.

The recreational use of an area generates local business and these businesses and their employees pay local taxes. But they also demand and require services which may cost fully as much as the taxes. Residences and small businesses create the need for schools and other services.¹

For a county having the natural recreation resource, the large recreation area attendances and seasonal homes, Livingston shows only moderate development in the retail trade sectors which normally cater to this market. The number of retail trade establishments in Livingston County in 1963 was only 390 compared with 453 in Gratiot and 457 in Ionia Counties.² These last two counties have only a small incidence of tourism. Also, Livingston County has now shown an increase in the number of retail establishments. From 1958 to 1962, Livingston County increased only by one, whereas Ionia decreased by 12 and Gratiot increased by 11. The comparison of the number of establishments seems to indicate that there has been little or no increased investment as demonstrated by the low number of establishments. There is then no increase in property taxes and revenue to the County.

The total number of paid employees in retail industries, such as food and dairy products stores, eating and drinking places, and entertainment and recreation services, amounts to 803. Of this number, 85 jobs were created by the expenditures of the recreation area users. The remaining jobs are dependent on other tourism or seasonal factors and business

¹Clawson and Knetsch, op. cit., pp. 247-248.

²Michigan State University, Bureau of Business and Economic Research, op. cit., pp. 226, 227, and 228.

generated by the county residents.

From the observation of retail employment, it appears that there may be some demand for local government services and, therefore, a cost would be created. However, no cost may be created because of the characteristics of those who hold these jobs. Figure 4, on page 76, indicated that there is an increase in total retail employment during the summer indicating a seasonal trend in employment. If most of these jobs are seasonal, as they often tend to be, these employees usually pursue some other occupation at other times of the year. If this is true they would be county residents requiring government services anyway. If they are "migrants" for the season and not county residents there would also be little effect. There would be little effect because they would not be permanent in the county and in need of government services.

There is then, no increase in absolute tax revenues and no increase in demand for government services such as schools, fire protection, etc. Therefore, there is no secondary economic loss.

Summary

In the final analysis of the factors or categories which were thought to create costs to the county, only three show measurable dollar-value lost. These are the County Road Commission, HCMA, and loss of property tax revenues. Table 21 shows the dollar value lost for three years, 1964 through 1966. The County Road Commission shows the most costs incurred.

TABLE 21.-Dollar-Value Cost to the County because of the
Recreation Areas

Category	1964	1965	1966	Total
Road Comm. ^a	\$185,900	\$110,900	\$ 97,900	\$394,700
HCMA ^b	37,028	37,503	37,979	112,510
Taxes ^c	<u>13,000</u>	<u>13,000</u>	<u>13,000</u>	<u>39,000</u>
Total:	\$235,928	\$161,403	\$148,879	\$546,210

^aYearly figure from page 93 of this paper.

^bSources of 1962 and 1966 figures cited on page 100 of this paper. The 1964 and 1965 figures were derived by means of interpolation.

^cTotal figure from page 100 of this paper.

CHAPTER VI

INTERPRETATIONS AND CONCLUSIONS

Introduction

As part of any research it is necessary to explain and interpret what the results of the application of certain data in selected research methods means. In this chapter an attempt will be made to analyse and interpret the meanings of the benefit and cost results, and render a number of conclusions.

To determine the significance of the results, one must go back to the research problem and again ask the question: Does the presence of large public recreation areas create an expense for the county which is not fully compensated through increased economic benefits to the county? With the results of the benefit and cost determination methods in mind, what is the answer to the question posed by this research problem? And, in the final conclusions, was the research hypothesis proven or disproven?

Interpretation of the Benefit Results

As part of this research, it was necessary to relate the economy, that is, the retail sector to the causes which influence the economy. Since no survey was made as part of this research of local merchants and their customers, there

is no information on: (1) the type of customers, (2) whether they are residents or non-residents, nor (3) the per capita expenditures of park visitors. Because of the lack of this information it was not known how the recreation area user relates to the economy. It was then necessary to determine a degree of association between a part of the economy (monthly sales tax in tourist-influenced businesses), and the recreation area user (measured by the monthly attendance at the recreation areas).

The rank correlation coefficients demonstrated the above relationship. Milstein has suggested a comparison of attendance to sales tax receipts as a means of showing this relationship.¹ Such high average coefficients as existed with the State Recreation Areas leads to the conclusion that people who visit these areas tend to spend more money than those who visit Kensington Metropolitan Park, which has lower average coefficient, and, therefore, Kensington does not relate well to the economy of the study area. Several factors are important here.

The recreation facilities and recreation seasons at Kensington are different than those of the State areas. Part of the reason the coefficients may be lower at Kensington is that it does not have overnight camping facilities and the

¹Discussion with Mr. David N. Milstein, Associate Professor, School of Hotel, Restaurant, and Institutional Management, Michigan State University, September 23, 1967.

State areas do. Campers tend to spend more than day users, therefore, the State areas cause more of an impact.¹

According to Kensington personnel, the primary entrance to the park is not in Livingston County, but in Oakland County. The secondary entrance is in Livingston County but is from a limited access highway, thus, affording little opportunity for visitors to make expenditures. Since 95.3 percent of the users of Kensington come from the Detroit region and several other counties to the east of the study area, a negligible amount of people use the other entrances.² Therefore, Kensington park visitors have little opportunity to make expenditures in the study area. This factor also supports the above conclusion.

However, several factors tend to discredit the above conclusion. One factor involves problems which occur in the utilization of the data. In making the correlations monthly figures for attendance and taxes were used. Since Kensington's season is longer than the State Areas, because of more emphasis on day-use activities such as: day camping, golf, and winter sports, months in the last and first yearly quarters sometimes had attendance figures as high as months in late spring. Because this runs counter to sales tax trends, the coefficients for Kensington were lower. Because

¹Hammer, op. cit.

²Detroit Metropolitan Area Regional Planning Commission, Park Users Survey, p. 41.

of this, it can be reasonably concluded that correlation comparisons can not be made between recreation areas which are as dissimilar in major facilities as Kensington and the State Recreation Areas. Table 4 on page 24 showed the type of facilities in each area. However, an exception can be made to this, because the state areas offer hunting which could tend to lengthen their recreation season also.

Sales tax data represents receipts for the whole county; not just the geographic areas around the recreation areas. The correlations or associations are not entirely accurate as indicators, because comparisons are made between the total economy in an industry group and only a part of the economic influence; i. e., expenditures of recreation area users. As a result, the whole economy (the retail sector of the county as represented by sales tax data) is too insensitive to record expenditures of only recreation area users. Therefore, the expenditures are not sufficiently reflected in the data to make a sizable difference in the outcoming correlation coefficient. This may be an important element, especially if expenditures are spread over several different retail items or the total expenditure is small.

Such seasonal factors as summer home residents, State Game Area users, and non-profit recreation organizations also influence the sales tax information. The problem of accounting for this influence is the second data problem. These

"other" seasonal factors and the inability to control their bearing on the study are the major shortcomings in this study. Although the study isolated the major seasonal factor, the summer home resident, the accuracy of the approach is open to question. There is a reasonable degree of accuracy in the number of seasonal home residents. However, the amount they spent, the rate of expenditure (dollars per day), and the per capita expenditure was not known. Here is where further study is necessary to test the utilization of the correlation method. Also, further study is necessary on seasonal or vacation homes and their economic impact.

A second conclusion which can be made is that the statistical hypothesis, as stated on page 9, was proven. The importance of the correlation coefficient as part of the sales tax method is that it demonstrated a high degree of correlation between the variables, and therefore, an increase in expenditures by recreation area users (from the State Recreation Areas) indicates an increase in local income. Some conclusions can be drawn based on the results of the research, but there is need for further study in the use of the correlations in recreation impact studies.

The correlation was only part of the modified sales tax method. The second part involved the determination of the gross income or dollar-value added through expenditures of recreationists. Since this method was discussed thoroughly in Chapter III and its shortcomings noted, we will not cover the methodology here.

Do recreation area users benefit the community? If so, how much directly and indirectly? How is the impact of other seasonal economic influences assessed?

The recreation area user does contribute to the economic well being of Livingston County, but only to a very small degree. In a comparison of the results of the two benefit determination methods, both came to a similar conclusion. However, the results of both methods are not exactly the same. The sales tax method found that park visitors spend \$9,450 annually, and the location quotient method found that the expenditures of visitors creates 85 jobs directly and indirectly. This seems illogical since the dollar-value added plus its income multiplier effect will not produce as many as 85 jobs.¹

However, it is not possible to make a realistic comparison, because the two methods do not possess a similar data base. In the sales tax method the three items of grocery stores, gas stations, and family restaurants were utilized as a means of measuring the impact of the recreation area user. Because U. S. Census employment data was not available for these exact same items, other tourist related items had to be used in the employment method. The Bureau of the Census records tourist-influenced retail employment under the groups of food and dairy products stores, eating and drinking places,

¹Arthur D. Little, Inc., op. cit., p. 46.

and entertainment and recreation services. These do not compare readily with those used in the sales tax method.

On page 73, Table 10 shows that the number employed in entertainment and recreation services in Livingston County are much higher than an average of the control counties, and that Livingston County is not too much higher than the control counties in the other groups. Why weren't the same groups used in the sales tax method? To use the same items in the sales tax method as in the employment method would have also resulted in some data problems. The items do not have the same meaning in each of the data sources. Therefore, it would be questionable in comparing methods whether the same thing would, in fact, be compared. Also, the item "entertainment and recreation services" does not exist as a sales tax item because such services are tax exempt.¹ Furthermore, the items used in the sales tax method were the only ones, other than "hotels and motels," which are both complete data collections items and tourist-influenced items.

A more accurate comparison of the two benefit determination methods could be had if "entertainment and recreation services" were excluded. The data for the two methods would then be more comparable. On Table 10 it can readily be seen that not as much employment is generated when this one item is excluded. Therefore, the jobs directly added amount to 53

¹Michigan Department of Treasury, op. cit., p. 52.

jobs, and 21 jobs are indirectly added. By determining the proportion of the total of these two figures which is attributable to the recreation area user, only 40 jobs are created. These figures compare more favorably with the income figure. Furthermore, the seasonal trend of retail employment in the study area tends to indicate that many of these jobs are seasonal. Although the methods are not fully definitive, both indicate a similar small degree of benefit.

If it is so difficult to make comparisons, why were two methods used? And why were these particular methods used? The objective in using the two methods was to indicate if benefits did occur and whether they exceeded the costs. It was felt that because of the limited accuracy of economic research methods in general, that a second method should be used to reinforce the primary method. If, as a result, both methods showed approximately the same results, the accuracy of the findings would be reinforced.

The sales tax method and the location quotient method (employment) were used primarily because they were the most feasible from a financial standpoint. The methods also are relatively simple applications of data, although the sales tax method is somewhat time consuming. Both methods have three very distinct advantages that would recommend their use were possible. First, they employ already existing data. This rules out the need for surveys to collect essential

information. Secondly, they both are a direct part of the local economy and are, therefore, valid measures of that economy. Because the location quotient is concerned with the relation between tourist-influenced industry and total employment, its relationship to the economy can be seen. The data used in the sales tax method represents a part of the income of the study area and is, therefore, a part of the local economy. In both methods the data is not just some application of a factor from another economic area.

Since employment and income tend to move together; that is, as sales rise and income rise, employment generated also tend to rise.¹ Because these factors usually move together, although not necessarily in the same proportion, the sales tax method and location quotient make a good set of measures to assess the impact of recreation facilities.² This is a third advantage.

The gross income figure is money directly added to the economy but does not include any of the second round multiplier benefits. The income multiplier was not calculated, because of the insignificant amount of direct income and, because data was not available to determine the multiplier. In Blome's study of the economic impact of the proposed Sleeping Bear Dunes Lakeshore, he assumed that 25 to 50

¹Clawson and Knetsch, op. cit., p. 239.

²Ibid.

percent of the first round income will be spent in the area. This means there would be a multiplier of from 1.5 to 2.0.¹ The multiplier depends upon how self-sufficient the county was or what percentage of the initial gross income would remain in the county. If these multiplier values were applied, the gross income figure would have a value equal to from one-half to twice the original income value. Even if the multiplier was applied, the impact of the recreation area users expenditures would still be small.

Much of the gross income must go outside the study area to buy goods and products necessary to service the seasonal and permanent customers. This income is lost to the county. It would appear from the imperfect information available that Livingston County is not self-sufficient in providing a large amount of what is needed for export. Because of its proximity to Detroit, it apparently relies upon it for many of the needed goods and services. The large shopping centers on the westside of Detroit are frequented by local residents.² Therefore, local retail and service industries do not exist within the county to meet the local potential demand, or they are forced out of business by competition from Detroit. The number of retail establishments in the county is far below

¹Blome, op. cit., p. 42.

²Discussion with Mr. Hans Haugard, Extension Natural Resource Agent, Livingston County, February 7, 1968.

the number in the control counties.¹ This indicates that the local demand may be satisfied outside of the county, or the competition has forced them out of business. The latter seems to be true since the number of active proprietors has declined by 42 between 1958 and 1963.² If this is the case, the same would be true of the wholesalers who supply the county businessmen, and what little gross income is made from recreation area users must be spent outside the community.

Employment has been indicated as being substantial in the entertainment and recreation services group. Much of the total number employed are probably seasonal. From Figure 4, page 76, we know that retail employment shows seasonal increases in the summer months. This group generally does have a high number of seasonal compared to permanent employees.³

Some of the other benefits briefly analyzed, which the county receives from the recreation areas, are payments in lieu of taxes for the State areas, expenditures of the Michigan Division of Parks, and expenditures of park concessionaires. Since these benefits are not a direct result of visitor expenditures, a thorough study was not made of their impact. The hypothesis directs the emphasis of the study toward visitor expenditures. The other benefits were briefly

¹Michigan State University, Bureau of Business and Economic Research, op. cit., pp. 226-229.

²Ibid.

³Arthur D. Little, Inc., op. cit., p. 48.

analyzed and included because of their indirect relation to visitor expenditures in the county.

Having so far discussed the use of the correlation coefficient and the results and significance of the benefit determination methods, it is now necessary to draw some conclusions as to why the results turned out as they did.

There are a number of conclusions which might be drawn as to why the visitor expenditures were low. One such conclusion is that park visitors buy their recreation needs at home and en route to the park but not in the county. Because of this, little is spent in the community around the park. An important point here is that the distance people travel to visit the parks in the study area is, at most, 40 miles or one hour's driving time. Park visitors can then buy their gasoline, food, and other recreational needs at home. They can travel to and from the recreation areas without stopping to make needed purchases in the county. Other studies have indicated that "a considerable amount of the expenditures occur outside of the areas concerned."¹ Because of the short distance, little is spent in the study area.

The recreation areas, especially Kensington, are day-use oriented. Overnight campers, cabin guests, and lodge guests

¹American Association for Health, Physical Education, and Recreation (ed.), Recreation Research, Collected papers from the National Conference on Recreation Research, 1965, Pennsylvania State University (Washington, D. C.: 1966), p. 59.

would spend more than day users. There is then little gross income derived from the day-use type user. Hammer has stated that local day-users spend on the average \$1.60 per capita per day, whereas overnight campers spend \$8.10 per capita per day in the local community.¹ What benefits that are derived to Livingston County are probably a result of camper expenditures more than that of day-users. The campers, however, probably do not contribute as much as would be expected. They do not spend much, because over 60 percent of the campers come from the Detroit region.² They compare with the day-user who is also from the near-by Detroit region, and who does not add substantially to the local income. Because of the proximity of most of the park visitors, their travel costs are reduced and less is spent in the local community. This leads to another conclusion; that the emphasis on day-use activities at the recreation areas negates any sizable economic benefit to the local economy..

Entrance fees are charged at the three State Recreation Areas but not at Kensington Metropolitan Park. The charging of fees at these areas may be a factor in causing less money to be spent in the area surrounding the park. Although there is no conclusive evidence, the charging of entrance fees may effect the amount and the number of expenditures made by

¹Hammer, op. cit.

²Michigan Department of Conservation, Division of State Parks, Camper Day Total - Livingston County by County Origin (unpublished [1964]), no page.

recreationists. Clawson and Knetsch state that fees to a recreation area "will have an effect on total expenditures and on the nature of expenditures."¹ Increases in fees cause attendance to decrease, and therefore, loss of money to the local area's economy. Fees may have a quite different affect, too. A small fee may discourage nearby people (Detroit region) from spending money for luxury or unnecessary items in the park area. The same fee would not affect expenditures of those who travel some distance, because their total trip cost would be high anyway and an entrance fee would not make that much difference. Therefore, because money is spent for a fee, removes it from the possibility of it being used to purchase certain items in the community around the park. Entrance fees may be one reason why more money is not spent in the local area. Further study would be necessary to substantiate what the actual effects are.

A fourth conclusion which may be drawn from the results is concerned with the availability of goods and services to the recreation area users. Research evidence does not prove conclusively, but there is evidence to indicate that the number and quality of the tourist-influenced retail establishments may not provide the needed goods and services for recreation area users. If visitors are to spend money, they must have a place in which to spend it. Low quality business concerns

¹Clawson and Knetsch, op. cit., p. 246.

in varying degrees of repair are found along recreation roads.¹ These types of establishments do not attract business. Rathmell found one factor which affects expenditure patterns is the area's environment.² Census information indicates that the number of retail establishments in the study area were low compared to the control counties.³ Also, the number of active retail proprietors are comparatively low.⁴ This information supplemented by field observation indicates there are few establishments on the recreation roads, especially around Brighton and Pinckney Recreation Areas. There are, however, a fair number of gasoline stations and restaurants in the towns of Pinckney and Brighton.⁵

The sales tax method included as measurement units three selected retail items. These may not have been the best indicators of what the study was trying to measure. There may be other sales tax items which are more influenced by the recreation area users, therefore, better measurement units. However, other studies such as Blome's found "food" and "services" the items summer residents spend a large share of their income on.⁶ Although there may be better sales tax

¹Observations made and recorded on February 10, 1968, by the author.

²Rathmell, op. cit., p. 80.

³Michigan State University, Bureau of Business and Economic Research, op. cit., pp. 226, 227, 228, and 229.

⁴Ibid.

⁵Observations made and recorded on February 10, 1968, by the author.

⁶Blome, op. cit., p. 30.

items to measure expenditures, the ones used were the most complete data items. Future research in which the sales tax method is to be used, should be certain to choose the items which best reflect recreationist's expenditures.

The results of this study tend to substantiate the findings of other research endeavors. The results of the modified sales tax method agrees in one respect with the findings of Pearson. He found that the "economic importance of recreation in the county is shown by the excessive number of retail sales establishments as compared with non-recreational rural areas . . ."¹ This research found little economic activity due to recreation; the number of retail establishments in Livingston County is below those of the two "non-recreational rural areas" or the control counties. Thus, this research supported Pearson's finding that the number of retail establishments is a good indicator of recreation economic activity.

Interpretation of Cost Results

Five separate categories of possible costs to the county were analyzed in an attempt to determine if any costs were attributed to the public recreation users. Of those analyzed, three demonstrated that they were costs to the county. These categories are the County Road Commission, millage paid to support the Huron-Clinton Metropolitan Authority, and loss of

¹Ross N. Pearson, "Recreation and Its Significance in the Economy of Ogenaw County, Michigan" (published Ph.D. dissertation, University of Michigan), cited in Dissertation Abstracts, Vol. XIV, no. 4 (1954), p. 657.

property taxes on the land acquired for public recreational uses. The last two are indirectly attributable to the recreation area users.

The results of the cost analysis indicated that there is a considerable amount of cost incurred by the county because of the recreation area user. The Livingston County Road Commission was most affected by the public recreation area users. The first year that cost estimates were made in this study was for 1964. During that year the costs amounted to \$185,900. The annual costs subsequently declined, and in 1966, recreation-influenced roads cost the Road Commission \$97,900. The decline could not be attributed to the diminishing need for improvements, but to the fact that funds were being allocated to other parts of the county.¹

The recreation road costs in 1964 amounted to about 20 percent of the county highway expenditures.² In 1966, the recreation costs consumed about 8.5 percent of the total county highway expenditures.³ The problem of financing the county road program is particularly difficult in a county such as Livingston. "The County Road Commissions, unlike cities and villages, do not have authority to levy taxes for road purposes."⁴ They are dependent upon three principal

¹ Livingston County Road Commission, Annual Reports, 1965, 1966, and 1967.

² Ibid.

³ Ibid.

⁴ Michigan Department of State Highways, op. cit., p. 71.

sources for revenues: the Motor Vehicle Highway Funds, Federal-Aid Secondary Funds, and locally raised revenues.¹ The Motor Vehicle Fund and Federal Funds are fairly predictable, but local revenues are dependent upon the financial ability of the county and townships after meeting their other financial requirements. To compound this problem, Livingston County roads experience the problems of both urban and rural counties. It is a county which has been rural in character and is now rapidly urbanizing. More and more demands are being placed on the county roads. ". . . obsolescence and structural failures are increasing at a faster rate than finances permit replacement."² Recreation area users are compounding the demands placed on the county road system without compensating the county for the use. Another study found the same situation occurring as the result of the establishment of reservoirs in a rural county.³ "There is a swiftly rising demand for more facilities such as streets, sidewalks, sewer systems, and the like. But sufficient additional revenue to meet these demands is not forthcoming."⁴ One conclusion which can be made is that the recreation area users are compounding the already existing problem.

In attempting to analyze the costs to the County Road

¹Ibid.

²Ibid., p. 90.

³Moore, op. cit., p. 148.

⁴Ibid.

Commission, three major shortcomings in the study must be noted for a proper understanding of the study's results. One limitation centers around the determination of the maintenance costs. Maintenance costs per mile were extracted from the Annual Road Commission Reports. These are the average per classification costs for all types of maintenance items on all the roads in the county. Because an average figure was used, the result may not be accurate. The maintenance on the recreation roads may have been more expensive or less expensive than other county roads, depending upon the type work done. The maintenance costs are then not too reliable. Construction costs, on the other hand, are fairly accurate.

A second limitation deals with the determination of how much of the total costs on recreation roads were caused by the recreation area visitors. Since the costs determined from the Annual Reports are total costs, how much of the costs would be attributed to the recreation area user alone? To accomplish this task, it was necessary to determine the different kinds of users and how much use they made of the recreation roads. It was assumed that there were three major road users: local, seasonal home residents, and recreation area visitors. Although we have a good estimate of use made by recreationists, we have only a reasonable estimate of the other uses. The estimate of local resident road use is undoubtedly too small and the result is, therefore, over-critical of the other uses. The number of local use represents the potential road use generated in the county; that is,

number of vehicles registered in the county. These vehicles are spread over the county and some probably may never use the recreation roads.

Seasonal resident use of the roads were determined using data from a study of seasonal homes in Wisconsin. It is believed that the information is applicable to the situation in Livingston County and it is at least a reasonable estimate.

The annual costs of the Road Commission was substantiated by the use of an indicator. This indicator employs some of the comparison methods used in benefit determination. Indicators appear to be reliable in determining costs of the Road Commission. It associates inadequacy in the study area with inadequacy in the control counties which do not have recreation-influenced roads. However, indicators are borne with the inherent assumptions which go with such comparisons. Their use and the application of their results should be used with caution.

One reason probably so little study has been made on the costs local government incurs from resource development projects, is the difficulty in assessing the costs. This researcher found that the county agencies interviewed had little idea except rough estimates of the costs recreation areas and their users created. The data they did have was not in a readily usable form. It required a certain amount of interpretation before it could be used. This was especially true in the case of the Road Commission where an attempt was made to come up with dollar-value figures.

The results of the interviews with the related county agency officers are the basis for the conclusions made here:

(1) The Road Commission is the only one of the county agencies affected markedly by the recreation areas and their visitors. Costs are incurred to the Commission but the exact degree of cost is still open to question. (2) Some insignificant costs are probably incurred by the Sheriff's Office, but they are minimal and are not affected by the recreation areas.

Another cost to the County is the annual millage it pays to support the Huron-Clinton Metropolitan Authority. This has been labeled an indirect cost in this study mainly because the County residents do not use Kensington nor any of the Authority's parks to any significant degree. One of the reasons they do not use Huron-Clinton Metropolitan Authority areas is because some of the recreational demand is probably absorbed by other public and private lands in the county. Thompson Lake, near Howell, as already alluded to, may meet some of the local demand. The State Recreation Areas and Game Areas may also be utilized by local residents. In a 1964 survey of camping in the Livingston County recreation areas, Livingston County residents accounted for 3.2 percent at Brighton; 2.0 percent at Island Lake; and 2.5 percent at Pinckney.¹ Camping attendance at these areas is greater

¹Michigan Department of Conservation, Division of State Parks, Camper-day Total--in Livingston County by County of Origin.

percentage-wise than total attendance at Kensington Metropolitan Park. There is also a substantial amount of rural farm land which may help satisfy the need for the most participated in activities of rural non-SMSA residents, what of hunting and fishing.¹ There is then probably an over supply of outdoor recreation land in the county; especially for the recreation demand generated within the county.

Based upon a 1959 park user survey, Livingston County does not use HCMA parks to any significant degree. However, because this data is almost ten years old, it may not be indicative of the situation as it exists today. The county population has been increasing at a rate of 7.2 percent since 1960.² As the county continues to urbanize, there will be more demand for recreation opportunities offered at Kensington and other Authority parks. Thus, the county residents will utilize the HCMA areas more.

The investment made now by the county in supporting HCMA may return many more tangible and intangible benefits in the long run. In the immediate future it will remain a cost to the government.

A third cost (an indirect cost) is the loss of taxable property. The initial loss in property taxes amounted to

¹Outdoor Recreation Resources Review Commission, National Recreation Survey, pp. 128 and 131.

²Michigan State University, Bureau of Business and Economic Research, op. cit., p. 38.

approximately \$13,000 assuming none of the property had developments on them. A thorough determination of the amount of taxes lost would have involved an examination of the county tax records going back to the early 1940's when the State, and later HCMA, began buying land in the county. For this reason and because tax losses are indirect losses or costs, this problem was not more thoroughly explored.

The loss of taxable land not only is an initial loss in revenue but also a loss in future development land. As the land is increasingly improved and its value raised, the amount of revenue lost to the county becomes important. The loss of tax base becomes a more important problem as demands for the services of the county increase. Thus, there is a decrease in taxable property as the costs and needs placed on government increase.

Neither the loss of taxes nor HCMA millage are costs directly attributable to the recreation area users; these are indirect costs. Their presence and magnitude have been included because they exist and should be kept in mind in any consideration of the direct losses.

In summary, the major costs directly created by the recreation area users are the costs to the County Road Commission. No costs were incurred by any of the other county agencies. The millage paid to support the Huron Clinton Metropolitan Authority and the loss of tax base are two indirect costs.

Final Conclusions

The research hypothesis has been proven. Non-resident users of the public recreation areas do not spend sufficient amounts of money in the county to offset the additional costs they create for the county. Based on the findings of this study which lead up to this conclusion a number of final conclusions or recommendations can be made. Several of these relate to policy issues.

This study has concerned itself with the determination of the tangible benefits created by recreation areas and their users. The primary or intangible social benefits, the reasons the parks and recreation areas were created, are the important benefits received from these areas. The large number of people from the Detroit area reap most of these intangible benefits. The recreation areas in Livingston County were created with this purpose in mind.

Other tangible or secondary benefits may also occur beyond those benefits which were reviewed and studied in this research. Knetsch states that "the total value of the park is derived from two sources: user benefits and those capitalized in land near the recreation area."¹ "The land value may be large in the case of lakes and some urban parks but

¹Jack L. Knetsch, "Outdoor Recreation Demands and Benefits," Journal of Land Economics, Vol. XXXIX, no. 4 (November, 1963), p. 393.

small in remote areas."¹ The public recreation areas in Livingston County may be one of the reasons industries have been moving into the county. It may also be the reason new homes are being built in southeastern quarter of the county. The lack of recreation areas is one reason why industry will not locate in some areas.² Management in the recent past has looked increasingly at whether community recreation facilities are available before locating a plant or factory.³ New homes and new industry has increased the property value in Livingston County 6 million dollars during 1966.⁴ Thus, the recreation areas may have been one of the factors in attracting new homes and industry to the county. This increases property values which in turn create more revenue for the county government. This is another tangible benefit.

The assessment of these "other" benefits is one fertile area for further research. Other subject areas in need of further research (1) is the use of the correlation coefficient in helping to determine economic influence; (2) seasonal homes

¹Ibid.

²William Papier, "Recreational Facilities Attract New Industry," American City, Vol. LXXII, part 2 (July, 1957), p. 131.

³Ibid.

⁴Livingston County Press, "Property Value up Six Million," (Howell, Michigan: April 19, 1967).

and their economic impact; and (3) the effect of entrance fees on recreation area user expenditures. It is recommended that further research be conducted on these varied aspects of economics and outdoor recreation in Livingston County.

One policy issue evolves around whether the State should compensate the county for the costs incurred because of the State Recreation Areas. This feeling is held by some of the local county officials. Based upon the findings of this study we know that the costs incurred by the County Road Commission far exceed the expenditures of the public recreation area user. Table 22 points out the comparison of costs and benefits. However, when both direct and indirect aspects are considered the benefit-cost ratio approaches 1:1. The reader should bear in mind that the indirect costs and benefits were not thoroughly evaluated in this study so these estimates may not be too accurate. Even if we assumed the B-C ratio was equal to one, all economic benefits would not go to the Road Commission to help meet its costs. The only way the Road Commission would benefit from park user expenditures is through increased economic activity that would be generated and the resulting taxes on the increased activity.

Two facts remain. The county can not provide the necessary roads for recreation area users, and the existing roads are a bottleneck as far as the accessibility to the recreation areas is concerned. Both the county and the State

TABLE 22.-Benefit - Cost Comparison

Cost-Benefit Category	1963	1964	1965*	1966*	1967
	(\$)				
<u>Direct Benefits</u>					
Expenditures of Recreation Area Users	9,450	9,450	9,450	9,450	9,450
Tax Redistribut. to the County	<u>13</u>	<u>15</u>	<u>11</u>	<u>27</u>	<u>12</u>
SUB TOTAL:	9,463	9,465	9,461	9,477	9,462
<u>Indirect Benefits</u>					
Div. of Parks	-	-	115,062	98,886	116,710
Lieu of Taxes	<u>16,000</u>	<u>16,000</u>	<u>16,000</u>	<u>16,000</u>	<u>16,000</u>
TOTAL:	35,463	35,465	150,623	134,363	142,172
<u>Direct Costs</u>					
Road Comm.	-	185,900	110,000	97,900	-
<u>Indirect Costs</u>					
HCMA	-	37,028	37,503	37,979	-
Taxes Lost	<u>-</u>	<u>13,000</u>	<u>13,000</u>	<u>13,000</u>	<u>-</u>
TOTAL:	-	235,928	161,403	148,879	-

*Comparable years because figures are available
in all categories.

Recreation Areas would serve to gain from better roads. The State Highway Department and the Conservation Department have been exploring this, and a change in policy is forthcoming.¹ In the heavily used areas the Conservation Department will pay the costs of road improvement.² The findings of this study should help substantiate this policy decision.

Livingston County is indeed unique. It is a rural county in between a number of highly populated areas. It is ideally located for many kinds of economic development. Because of its relationship to several urban areas it has been to the advantage of Livingston County that they joined the Detroit Area Regional Planning Commission and Huron Clinton Metropolitan Authority. In this way the county is in on decisions which will affect the county and the surrounding units of government mutually. It may cost the county money to support HCMA and the Planning Commission, but as Livingston County continues to urbanize the benefits of coordinated regional planning will begin to show.

On the regional level Livingston County has a voice in regional decisions which affect the county. But on the State level decisions, it becomes difficult for local units of government to make its needs and wishes heard. In the past the natural resource program of the State has not given proper

¹Discussions with Mr. James Hane, Park Planner, Michigan Division of State Parks, February 15, 1968.

²Ibid.

consideration to the full effects (economic and social) of its resource development policies. Natural resource development has not been comprehensively planned. There has not been proper consideration given in the planning process as to the possible effects, for example, of recreation developments. The State should include as part of its resource development policies the consideration of the costs and benefits from such developments. It is not good planning, nor in the public interest, to pursue a policy of drawing large numbers of visitors into local areas without taking steps to see that the local government can finance their responsibilities. Steps should be taken to determine if the county government can provide the necessary road maintenance and construction, police protection, and other government services. State parks and recreation areas do not always create economic benefits for the local government. This has been learned in this research. In planning a recreation area the costs and benefits should be determined. If the costs to the local government exceed the benefits then provision should be made by the State to help the government unit to provide the type of services necessary. Such services as good roads enhance the enjoyment of the recreation facility as well as meet community needs.

Business enterprises in the county could be part of the answer to the financial deficit between benefits and costs

from the recreation area users. Have local businesses gone after the potential market created by the recreation areas? Could the retail sector through promotional and special merchandizing attract the recreation area user? Could private enterprise capitalize on the recreation areas which serve as attractions? These are questions which could be answered by further research.

In conclusion, the research has substantiated the research hypothesis. It has determined which of the economic factors create benefits to the study area and which county agencies incur costs because of the recreation area users. It has explored the use of correlations as a means of relating cause and effect; recreation area users and sales tax receipts. Under certain conditions this method can be useful and fairly reliable. The research has assessed the impact of predominately day-use recreation areas on the economy.

The research problem was indeed a real one; not merely a verification of a theory. Because it dealt with the actual situation its findings may be helpful in policy decisions which might be made concerning the future of Livingston County.

In summary, the secondary conclusions reached are as follows: (1) The correlation coefficients used in the modified sales tax method demonstrated a high degree of association between monthly sales tax receipts and monthly recreation area attendance; (2) Kensington Metropolitan Park

was found not relating well to the economy of the study area possibly because of its "economic" isolation; (3) that further study is necessary to refine the use of the modified sales tax method; and (4) that more research is needed to determine the economic impact of the seasonal home in Livingston County.

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APPENDIX

COST DETERMINATION INTERVIEW FORMAT

for the

Livingston County Road Commission

The objective of this interview is to determine the costs incurred to the county government because of the public recreation areas and the users of these recreation areas. The recreation areas involved are Brighton, Island Lake, and Pinckney Recreation Areas which are administered by the Michigan Department of Conservation, and Kensington Metropolitan Park administered by Huron Clinton Metropolitan Authority.

- (1) How many miles of roads are you responsible for in the county?
- (2) What are the separate classifications of roads in the county which come under your responsibility? What is the milage of each classification?
- (3) What traffic volume is each classification constructed to handle?
- (4) How much do they handle?
- (5) What is the county road milage within the recreation areas which the Commission is responsible for?
- (6) What are the access routes to the recreation areas? Are these access roads a burden to the Commission because they are access roads to the recreation areas?

- (7) What is the cost per mile to construct the type of roads which are used in and around the recreation areas? Cost per mile to maintain?
- (8) What are the Commission's expenditures by item per month? Annually?
- (9) What kind of agreement, if any, does the Road Commission have with the Michigan Department of Conservation and/or the Huron Clinton Metropolitan Authority for road construction and maintenance?
- (10) Do you think the State and HCMA should defray the costs of maintenance and construction of roads in and around the recreation areas?

COST DETERMINATION INTERVIEW FORMAT

for the

Livingston County Sheriff's Office

The objective of this interview is to determine the costs incurred to the county government because of the public recreation areas and the users of these recreation areas. The recreation areas involved are Brighton, Island Lake and Pinckney Recreation Areas which are administered by the Michigan Department of Conservation, and Kensington Metropolitan Park administered by the Huron Clinton Metropolitan Authority.

- (1) What is the size of your force? Number of cars?
Number of Officers?
- (2) What is your busiest season? What is your busiest month?
- (3) What is the total milage of your force per month?
- (4) What is the cost per mile?
- (5) What kind of agreement, if any, does your Office have with the Michigan Department of Conservation and/or the Huron Clinton Metropolitan Authority for providing law enforcement in and around the recreation areas?
- (6) Does your Office routinely patrol in the recreation areas? Patrol in the vicinity of the recreation areas? If so, to what extent?
- (7) How many arrests, persons-taken-into custody, and citations are made per month in the county?

- (8) How many arrests, persons-taken-into custody, and citations are made in the recreation areas? In the vicinity of the recreation areas? Of non-residents?
- (9) Does your office patrol and have jurisdiction over the State and Federal Highways in Livingston County?
- (10) What is the average cost to your Office per arrest?
- (11) How much state aid does your Office receive annually? (financial and other)

COST DETERMINATION INTERVIEW FORMAT

for the

Livingston County Prosecuting Attorney

The objective of this interview is to determine the costs incurred to the county government because of the public recreation areas and the users of these recreation areas. The recreation areas involved are Brighton, Island Lake, and Pinckney Recreation Areas which are administered by the Michigan Department of Conservation, and Kensington Metropolitan Park owned by the Huron Clinton Metropolitan Authority.

- (1) What are the attitudes of the county (local) court toward violators of public park regulations?
- (2) What are the total court cases in Livingston County court per year?
- (3) What are the number of court cases involving the violation of park and recreation areas regulations?
- (4) What is an average cost per court case for the county?
- (5) What are the monthly expenditures of the County Prosecuting Attorney's office? Annual?
- (6) How many or what percentage of the total court cases involve as the defendant people who came to the county to use the recreation areas?



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